

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 225 CHILD RESTRAINT ANCHORAGE SYSTEMS LOWER AND TETHER ANCHORAGES

GENERAL MOTORS CORP.
2004 CHEVROLET EXPRESS , MPV
NHTSA NO. C40111

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443



OCTOBER 6, 2004

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
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Prepared By: Debbie Messick
Approved By: Shanté Amante
Approval Date: 10/6/04

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Appendix A – Owner's Manual Child Restraint Information

Appendix B – Manufacturer's Data

Appendix C – Laboratory Notice of Test Failure

SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2004 Chevrolet Express MPV was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 225 testing to determine if the vehicle was in compliance with the requirements of the standard. The purpose of this standard is to establish requirements for child restraint anchorage systems to ensure their proper location and strength for the effective securing of child restraints, to reduce the likelihood of the anchorage systems' failure and to increase the likelihood that child restraints are properly secured and thus more fully achieve their potential effectiveness in motor vehicles.

1.1 The test vehicle was a 2004 Chevrolet Express MPV. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1GNFG15XX41117979

B. NHTSA No.: C40111

C. Manufacturer: GENERAL MOTORS CORP.

D. Manufacture Date: 08/03

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 225 testing during the time period September 14 - 28, 2004.

SECTION 2

COMPLIANCE TEST RESULTS SUMMARY

2.0 TEST RESULTS

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, TP-225T dated 3 May 2001 and TP-225L dated 11 June 2001.

Based on the test performed, the 2004 Chevrolet Express MPV appeared to meet the requirements of FMVSS 225 testing. Strength and displacement summary data are provided below.

Table 1. Summary Data for Strength and Displacement

GTL Test #	Fixture Type	Seating Position	Max. Load (N)	Displacement (mm)
5259	SFAD 2 Lower Anchor	2 nd Row Left	10,902	68.2
5260	SFAD 2 Tether Strap	2 nd Row Right	14,865	95.7
5261	SFAD 1 Tether Strap	3 rd Row Right	14,865	152.8

Table 2. General Test and Vehicle Parameter Data

VEH. MOD YR/MAKE/MODEL BODY	2004 Chevrolet Express
VEH. NHTSA NO.	C40111
VIN	1GNFG15XX41117979
VEH. BUILD DATE	08/03
TEST DATE	09/14/04 – 09/28/04
TEST LABORATORY	GTL
OBSERVERS	Grant Farrand, Jimmy Latane, Amanda Prescott

GENERAL INFORMATION:

Date Received: 06/02/04 Odometer Reading: 1141

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: GENERAL MOTORS CORP.

Date of Manufacture: 08/03 VIN: 1GNFG15XX41117979

GVWR: 3266 kg; GAWR FRONT: 1633 kg
GAWR REAR: 1814 kg

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2004 Chevrolet Express MPV.

DATA SHEET 1
CHILD RESTRAINT TETHER ANCHORAGE CONFIGURATION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV

VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979

VEH. BUILD DATE: 08/03; TEST DATE: SEPTEMBER 14, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

Number of DSP's in Test Vehicle As Stated on Tire Label using Figures for Maximum Vehicle Loading:

Front Seat=	<u>2</u>
Second Row Seat=	<u>3</u>
Third Row Seat=	<u>3</u>
Total=	<u>8</u>

SEATING POSITION		OBSERVED CONFIGURATION			
		Permit the attachment of a tether hook	Accessible without the need for any tool other than a screwdriver or coin	Ready for use without the need for any tools	Sealed to prevent the entry of exhaust fumes
Front	Left	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A
	Right	YES*	YES*	YES*	YES*
Second	Left	YES	YES	YES	YES
	Center	NO	N/A	N/A	N/A
	Right	YES	YES	YES	YES
Third	Left	NO	N/A	N/A	N/A
	Center	NO	N/A	N/A	N/A
	Right	YES	YES	YES	YES

REMARKS: *FRONT PASSENGER SEAT PERMITS THE ATTACHMENT OF A TOP TETHER HOOK, BUT OWNERS MANUAL SAYS NOT TO INSTALL CHILD SEAT IN THIS POSITION DUE TO NO AIR BAG CUT-OFF SWITCH ON THIS VEHICLE.

RECORDED BY: *[Signature]*

DATE: 09/14/04

APPROVED BY: *[Signature]*

DATA SHEET 2
CHILD RESTRAINT LOWER ANCHORAGES CONFIGURATION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV

VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979

VEH. BUILD DATE: 08/03 ; TEST DATE: SEPTEMBER 15, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

OBSERVED LOWER ANCHORAGE CONFIGURATION	SEAT POSITION				
	FRONT	SECOND		THIRD	
		LEFT	RIGHT	LEFT	RIGHT
Above anchorage permanently marked with a circle not less than 13 mm in Dia.; and whose color contrasts with its background; and its center is not less than 50 mm and not more than 75 mm above the bar, and in the vertical longitudinal plane that passes through the center of the bar.	Left	N/A	YES	YES	N/A
	Center	N/A	N/A		N/A
	Right	N/A	YES	YES	N/A
Each of the bars is visible, without the compression of the seat cushion or seat back, when the bar is viewed, in a vertical longitudinal plane passing through the center of the bar, along a line marking an upward 30 degree angle with a horizontal plane.	Left	N/A	YES	YES	N/A
	Center	N/A	N/A		N/A
	Right	N/A	YES	YES	N/A
Diameter of the bar (mm)	Left	N/A	5.94	5.94	N/A
	Center	N/A	N/A		N/A
	Right	N/A	5.94	5.94	N/A
Inspect if the bars are straight, horizontal and transverse	Left	N/A	YES	YES	N/A
	Center	N/A	N/A		N/A
	Right	N/A	YES	YES	N/A

DATA SHEET 2 CONTINUED
CHILD RESTRAINT LOWER ANCHORAGES CONFIGURATION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV

VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979

VEH. BUILD DATE: 08/03; TEST DATE: SEPTEMBER 15, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

OBSERVED LOWER ANCHORAGE CONFIGURATION	SEAT POSITION			
		FRONT	SECOND	THIRD
Inspect if the centroidal longitudinal axes are collinear within 5 degrees.	Left	N/A*	YES	N/A
	Center	N/A	N/A	N/A
	Right	N/A	YES	N/A
Inspect the inside surface of the bar that is straight and horizontal section of the bars, and determine they are not less than 25 mm, but not more than 40 mm in length.	Left	N/A*	30 MM 30 MM	N/A
	Center	N/A	N/A	N/A
	Right	N/A	30 MM 30 MM	N/A
Inspect if the bars can be connected to, over their entire inside length by the connectors of child restraint system.	Left	N/A*	YES	N/A
	Center	N/A	N/A	N/A
	Right	N/A	YES	N/A
Measure the distance between the center of the length of one bar to the center of the length of the other bar. The requirement is 280 mm \pm 1 mm.	Left	N/A*	280	N/A
	Center	N/A	N/A	N/A
	Right	N/A	280	N/A
Inspect if the bars are an integral and permanent part of the vehicle.	Left	N/A*	YES	N/A
	Center	N/A	N/A	N/A
	Right	N/A	YES	N/A
Inspect if the bars are rigidly attached to the vehicle. If feasible, hold the bar firmly with two fingers and gently pull.	Left	N/A*	YES	N/A
	Center	N/A	N/A	N/A
	Right	N/A	YES	N/A

* DRIVER'S SEAT

RECORDED BY: *G. Farrand*

APPROVED BY: *D. Messick*

DATE: 09/15/04

DATA SHEET 2 CONTINUED
CHILD RESTRAINT LOWER ANCHORAGES CONFIGURATION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV

VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979

VEH. BUILD DATE: 08/03; TEST DATE: SEPTEMBER 15, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

OBSERVED LOWER ANCHORAGE CONFIGURATION	SEAT POSITION			
		FRONT	REAR	THIRD
Optional Marking: At least one anchorage bar (when deployed for use, if storable anchorages), one guidance fixture, or one seat marking is visible	Left	N/A*	N/A	N/A
	Center	N/A	N/A	N/A
	Right	N/A	N/A	N/A
Optional Marking: If guidance fixtures are used, the fixture(s) must be installed.	Left	N/A*	N/A	N/A
	Center	N/A	N/A	N/A
	Right	N/A	N/A	N/A

* DRIVER'S SEAT

RECORDED BY: *G. Farrand*

DATE: 09/15/04

APPROVED BY: *D. Messic*

DATA SHEET 3
LOCATION AND DIMENSIONAL MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV

VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979

VEH. BUILD DATE: 08/03; TEST DATE: SEPTEMBER 15, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

Number of DSP's in Test Vehicle As Stated on Tire Label using Figures for Maximum Vehicle Loading:

Front Seat=	<u>2</u>
Second Row Seat=	<u>3</u>
Third Row Seat=	<u>3</u>
Total=	<u>8</u>

SEAT POSITION FOR TETHER		LOCATION OF DSPs	TETHER ANCHORAGE LOCATION	
		TETHER OBSERVED	REQUIRED	MEASURED Is it in the required zone?
FRONT	Left	N/A	N/A	N/A
	Center	N/A	N/A	N/A
	Right	YES*	NO	YES
SECOND	Left	YES	YES	YES
	Center	NO	NO	N/A
	Right	YES	YES	YES
THIRD	Left	NO	NO	NO
	Center	NO	NO	N/A
	Right	YES	YES	YES

*FRONT PASSENGER SEAT PERMITS THE ATTACHMENT OF A TOP TETHER HOOK, BUT OWNERS MANUAL SAYS NOT TO INSTALL CHILD SEAT IN THIS POSITION DUE TO NO AIR BAG CUT-OFF SWITCH ON THIS VEHICLE.

RECORDED BY: *[Signature]*

DATE: 09/15/04

APPROVED BY: *[Signature]*

DATA SHEET 3 CONTINUED
LOCATION AND DIMENSIONAL MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV

VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979

VEH. BUILD DATE: 08/03; TEST DATE: SEPTEMBER 15, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

Number of DSP's in Test Vehicle As Stated on Tire Label using Figures for Maximum Vehicle Loading: Front Seat= 2 Second Seat 3 Third Seat= 3 Total= 8

SEAT POSITION FOR LOWER ANCHORAGE		PRESENCE OF ANCHORAGES				COMMENTS		
		REQUIRED		OBSERVED				
FRONT		NONE		NONE				
SECOND		2		2		LEFT, RIGHT		
THIRD		NONE		NONE				
SEAT POSITIONS FOR LOWER ANCHORAGES		LOCATION OF ANCHORAGE				COMMENTS		
		MEASURED FROM "Z" (mm)		MEASURED FROM "SRP" (mm)				
		Left	Right	Left	Right	PITCH	ROLL	YAW
FRONT	Left	N/A		N/A		N/A		
	Center	N/A		N/A		N/A		
	Right	N/A		N/A		N/A		
SECOND	Left	40	40	151	150	13°	0°	0°
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right	40	40	150	150	13°	0°	0°
THIRD	Left	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RECORDED BY: *G. Farrand*

APPROVED BY: *D. Messia*

DATE: 09/15/04



DATA SHEET 4
ANCHORAGE STATIC LOADING

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV
 VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979
 VEH. BUILD DATE: 08/03 ; TEST DATE: SEPTEMBER 28, 2004
 TEST LABORATORY: GENERAL TESTING LABORATORIES
 OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT
 TEST # 5260 & 5261

TETHER ANCHORAGE- WITH SFAD:

SEATING POSITION	Seat, Seat Back & Head Restraint positions			Type of SFAD used	Angle	Initial location	Onset rate	Force Applied	Final location	Horizontal Displacement
	Seat	Seat Back	Head Restraint							
Front	Driver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Second	Left	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right (if any)	FIXED	FIXED	N/A	8°	0.0	577 N/SEC	14,865	95.7	95.7
Third	Left	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right	FIXED	FIXED	N/A	10°	0.0	577 N/SEC	14,865	152.8	152.8

REMARKS: TESTED TO S6.3.1

RECORDED BY: 
 APPROVED BY: 

DATE: 09/28/04

DATA SHEET 5
ANCHORAGE STATIC LOADING

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET EXPRESS MPV
 VEH. NHTSA NO: C40111; VIN: 1GNFG15XX41117979
 VEH. BUILD DATE: 08/03; TEST DATE: SEPTEMBER 28, 2004
 TEST LABORATORY: GENERAL TESTING LABORATORIES
 OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

TEST # 5259

LOWER ANCHORAGE- FORWARD FORCE APPLICATION:

SEATING POSITION	Seat, Seat Back & Head Restraint positions			Measured Angles		Initial location	Onset rate	Force Applied	Final location	Displacement
	Seat	Seat Back	Head Restraint	Vertical	Horizontal					
Front	Driver	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Second	Left	FIXED	FIXED	N/A	10°	0.0	423 N/SEC	10,902	68.2	68.2
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right (if any)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Third	Left	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

REMARKS:

RECORDED BY: 
 APPROVED BY: 

DATE: 09/28/04

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
COMPUTER	AT&T	486DX266	BEFORE USE	BEFORE USE
LOAD CELL	INTERFACE	496	07/04	07/05
LINEAR TRANSDUCER	CELESCO	69	BEFORE USE	BEFORE USE
LINEAR TRANSDUCER	CELESCO	70	BEFORE USE	BEFORE USE
LINEAR TRANSDUCER	CELESCO	72	BEFORE USE	BEFORE USE
LEVEL	STANLEY	42-449	08/03	02/05
FORCE GAUGE	CHATILLON	8761	BEFORE USE	BEFORE USE
CALIPER	N/A	Q9322365	BEFORE USE	BEFORE USE

SECTION 5
PHOTOGRAPHS



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.1
¾ FRONTAL RIGHT SIDE VIEW OF VEHICLE



2004 CHEVROLET EXPRESS
NHTSA NO. C40011
FMVSS NO. 225

FIGURE 5.2
¾ REARWARD LEFT SIDE VIEW OF VEHICLE

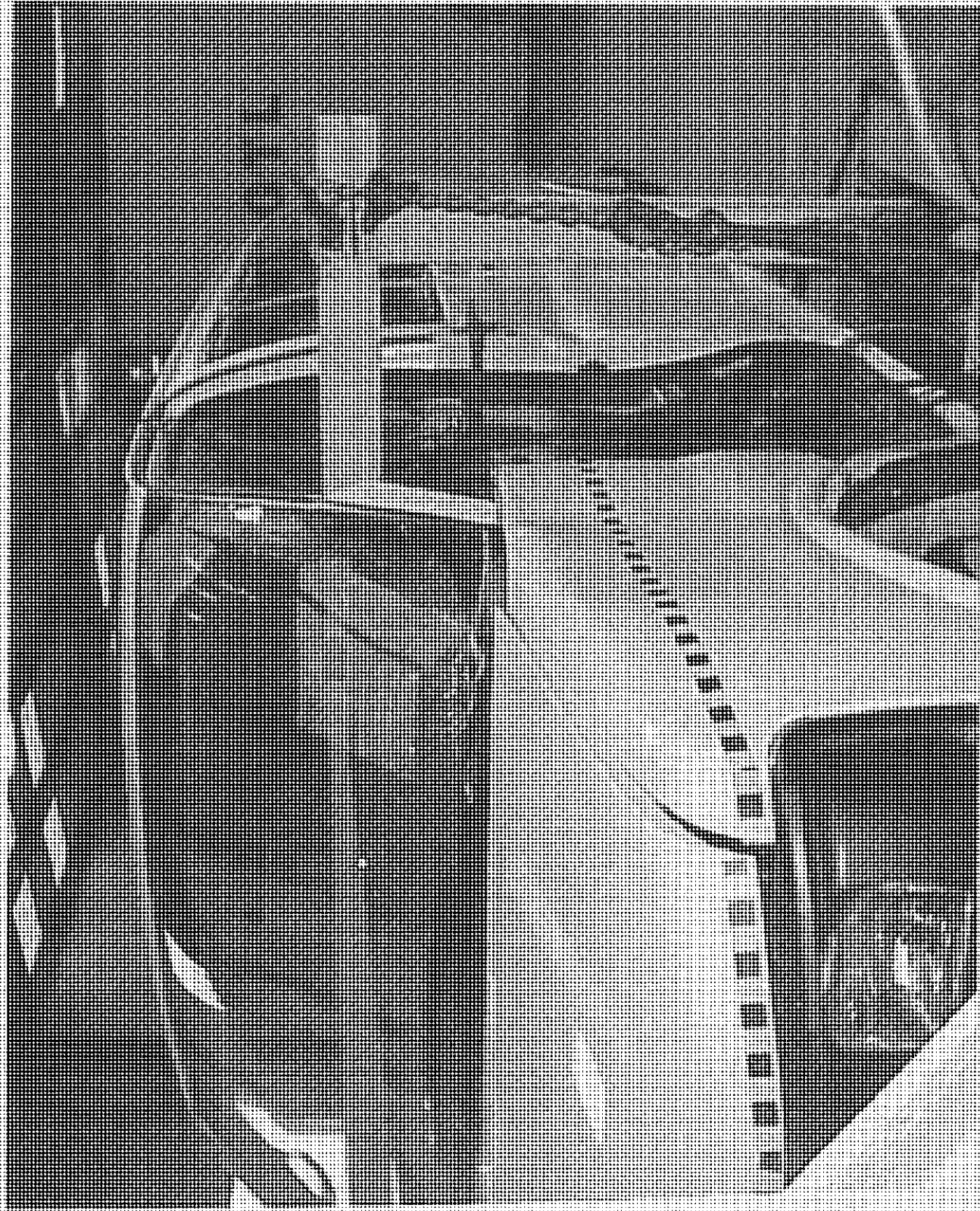


UNITED STATES DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
FEDERAL MOTOR VEHICLE SAFETY STANDARDS
FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF
MANUFACTURE SHOWN ABOVE
CONFIDENTIAL 11/1/79

VEHICLE IDENTIFICATION NUMBER
CAN THE VIN BE REPRODUCED AIR FUEL SYSTEM PRESSURE
EPA FUEL CONSUMPTION 18.5 L/100 MI 24.0 L/100 MI
OR FUEL CONSUMPTION 18.5 L/100 MI 24.0 L/100 MI
EPA FUEL CONSUMPTION 18.5 L/100 MI 24.0 L/100 MI
SEE OWNER'S MANUAL FOR MORE INFORMATION

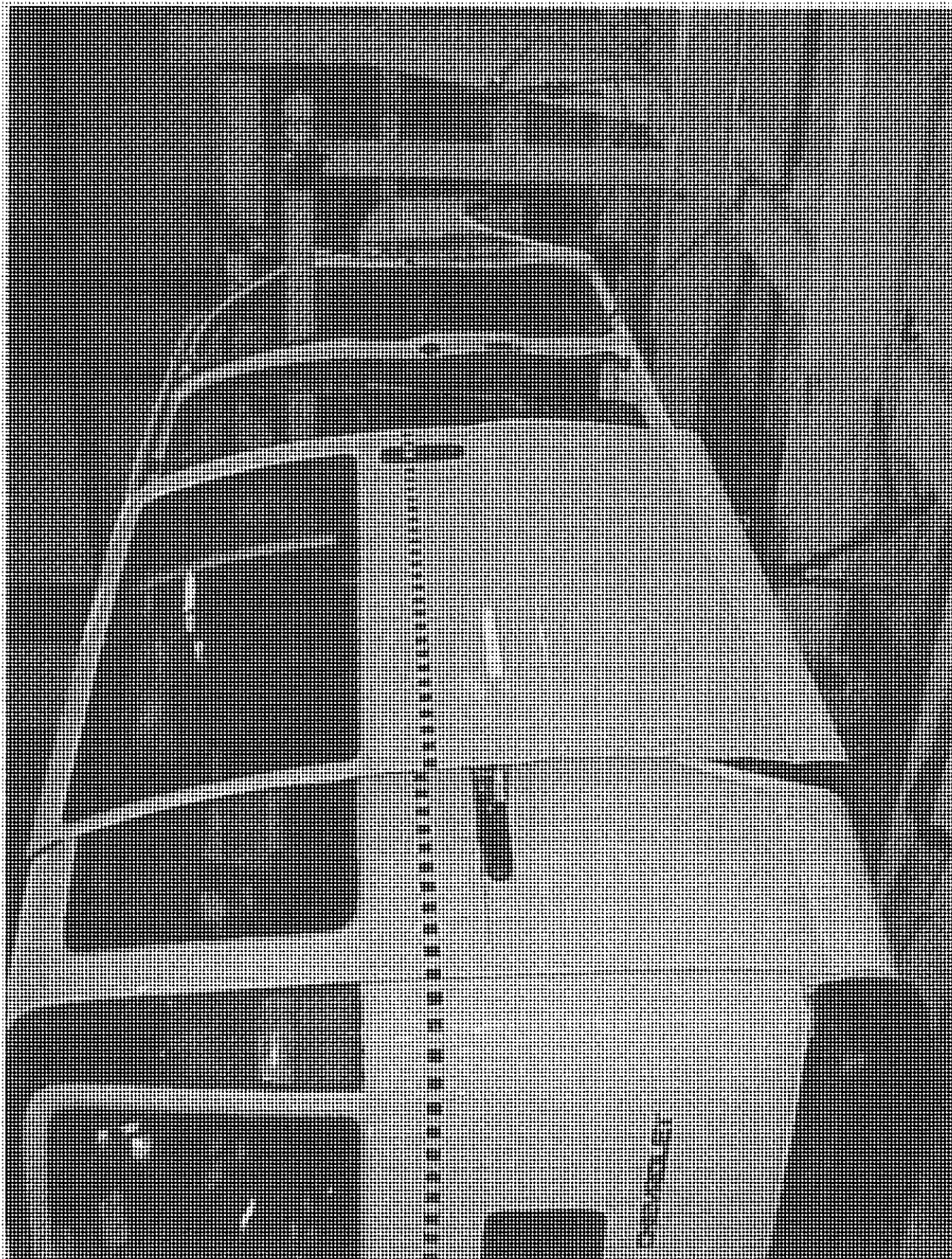
2104 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.3
CLOSE-UP VIEW OF VEHICLE CERTIFICATION
AND TYPE INFORMATION LABEL



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 226

FIGURE 5.4
3/4 LEFT FRONT VIEW OF TEST VEHICLE
IN TEST RIG



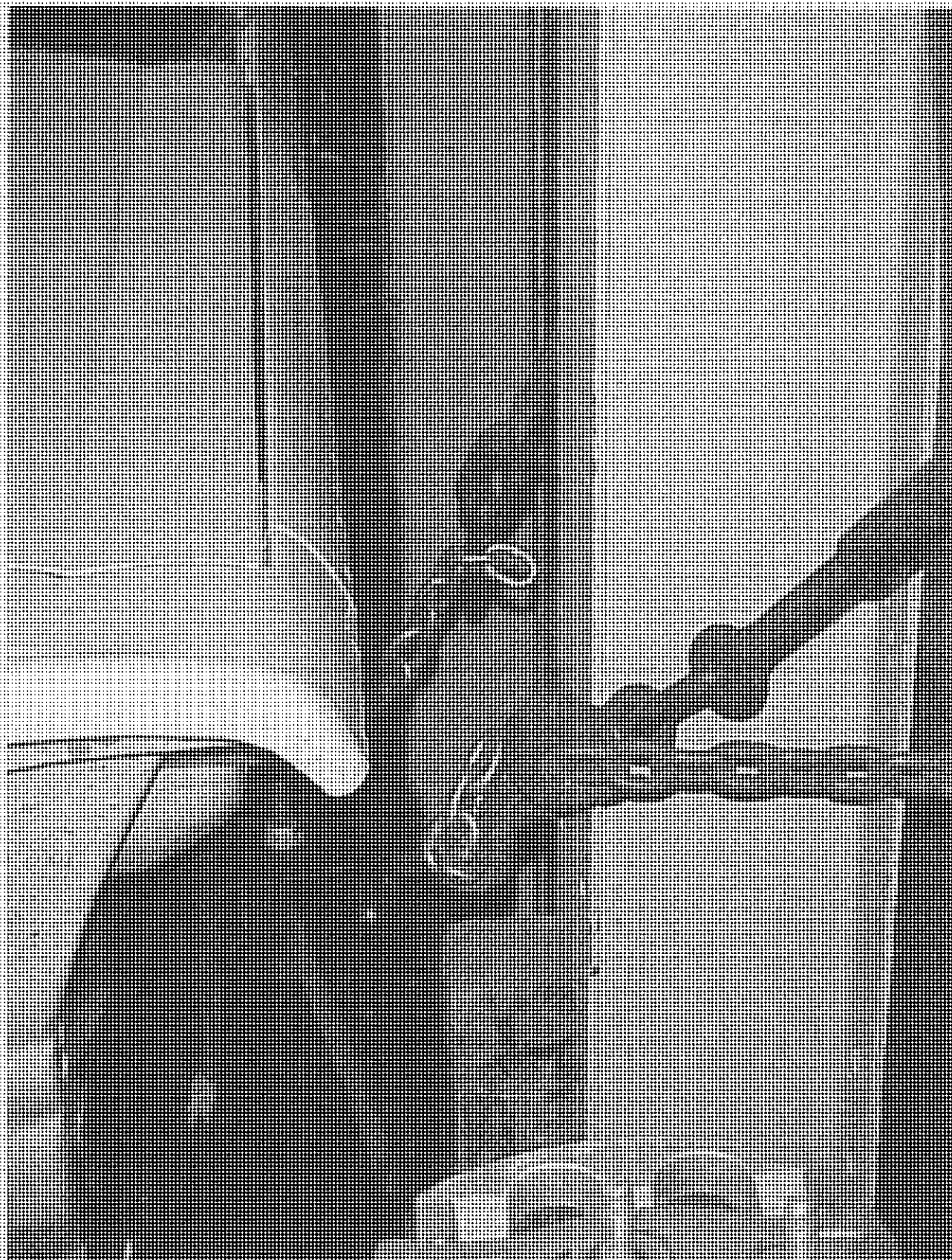
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.5
1/4 RIGHT REAR VIEW OF TEST VEHICLE
IN TEST RIG



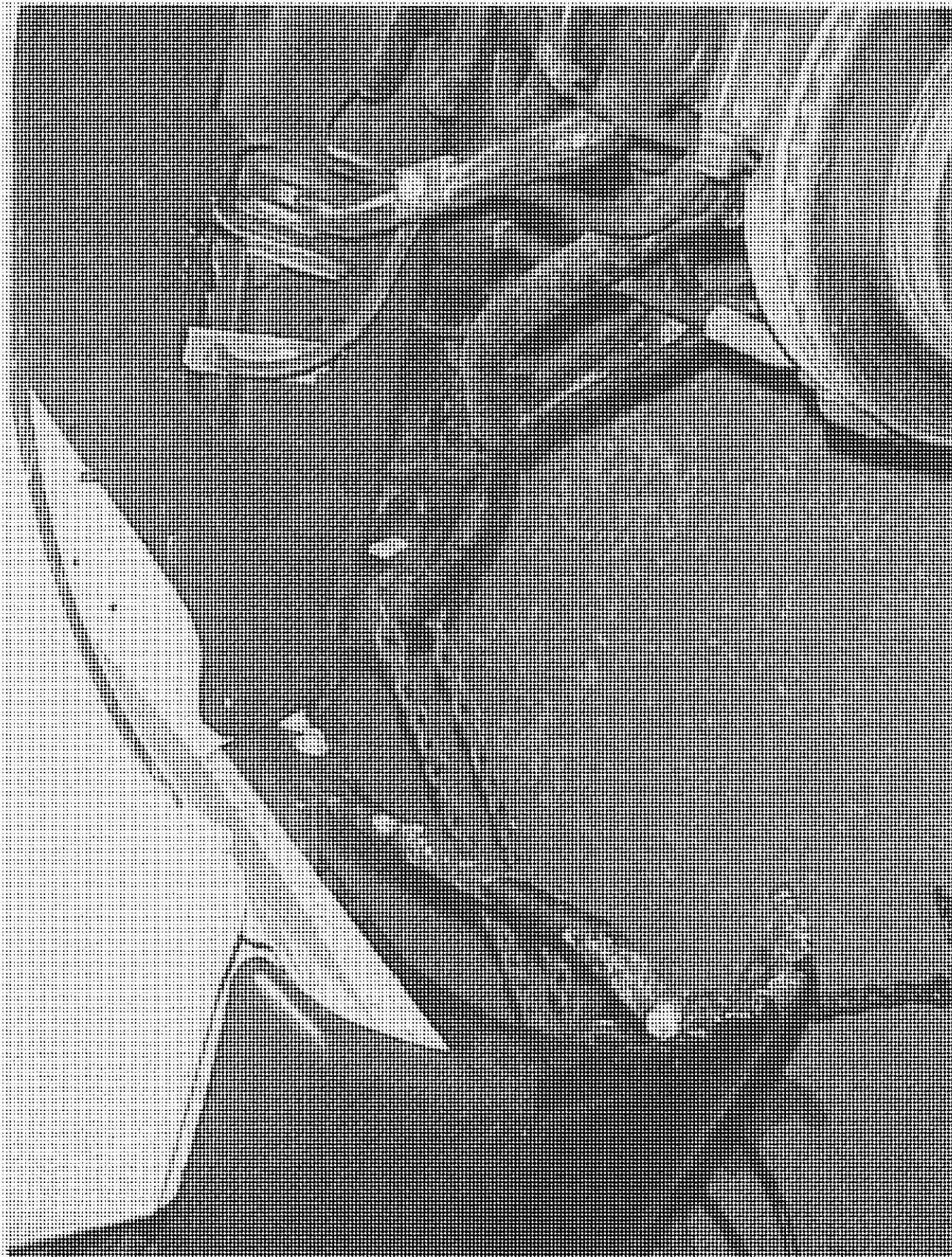
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.6
RIGHT FRONT VEHICLE TIE DOWN



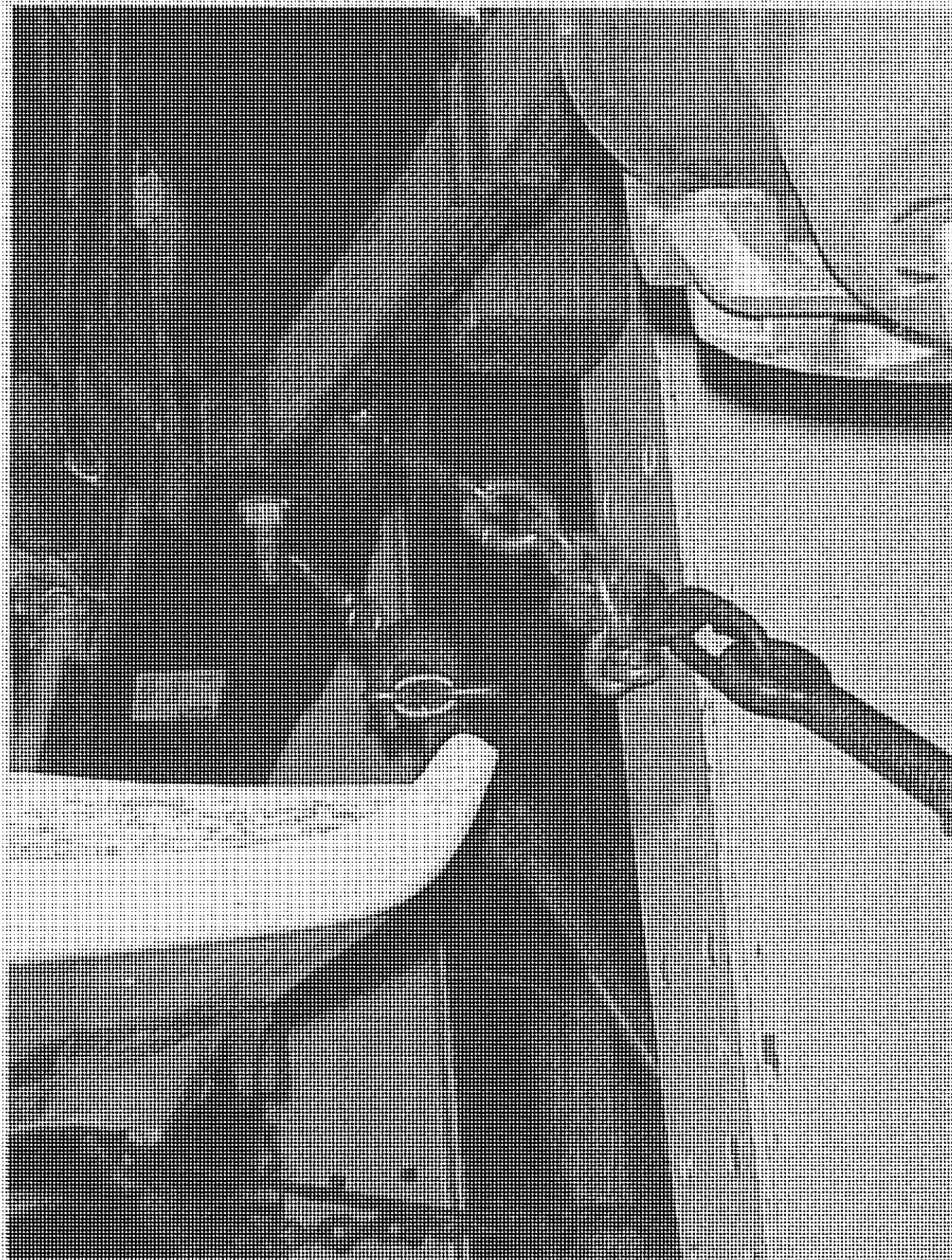
2004 CHEVROLET EXPRESS
NHTSA NO. C4011f
FMVSS NO. 225

FIGURE 5.7
RIGHT REAR VEHICLE TIE DOWN



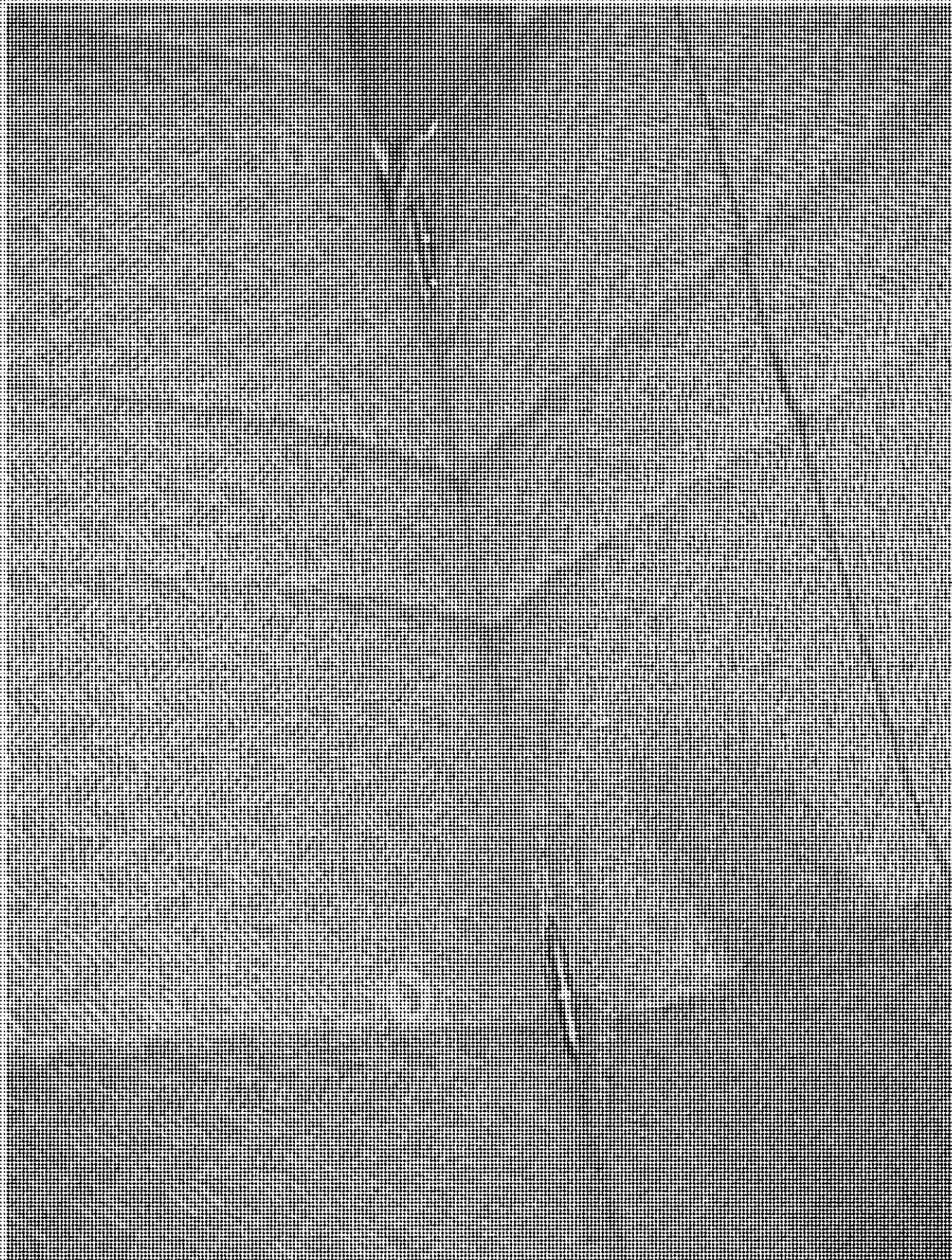
2004 CHEVROLET EXPRESS
NHSTA NO. C40111
FMVSS NO. 225

FIGURE 5.8
LEFT FRONT VEHICLE TIE DOWN



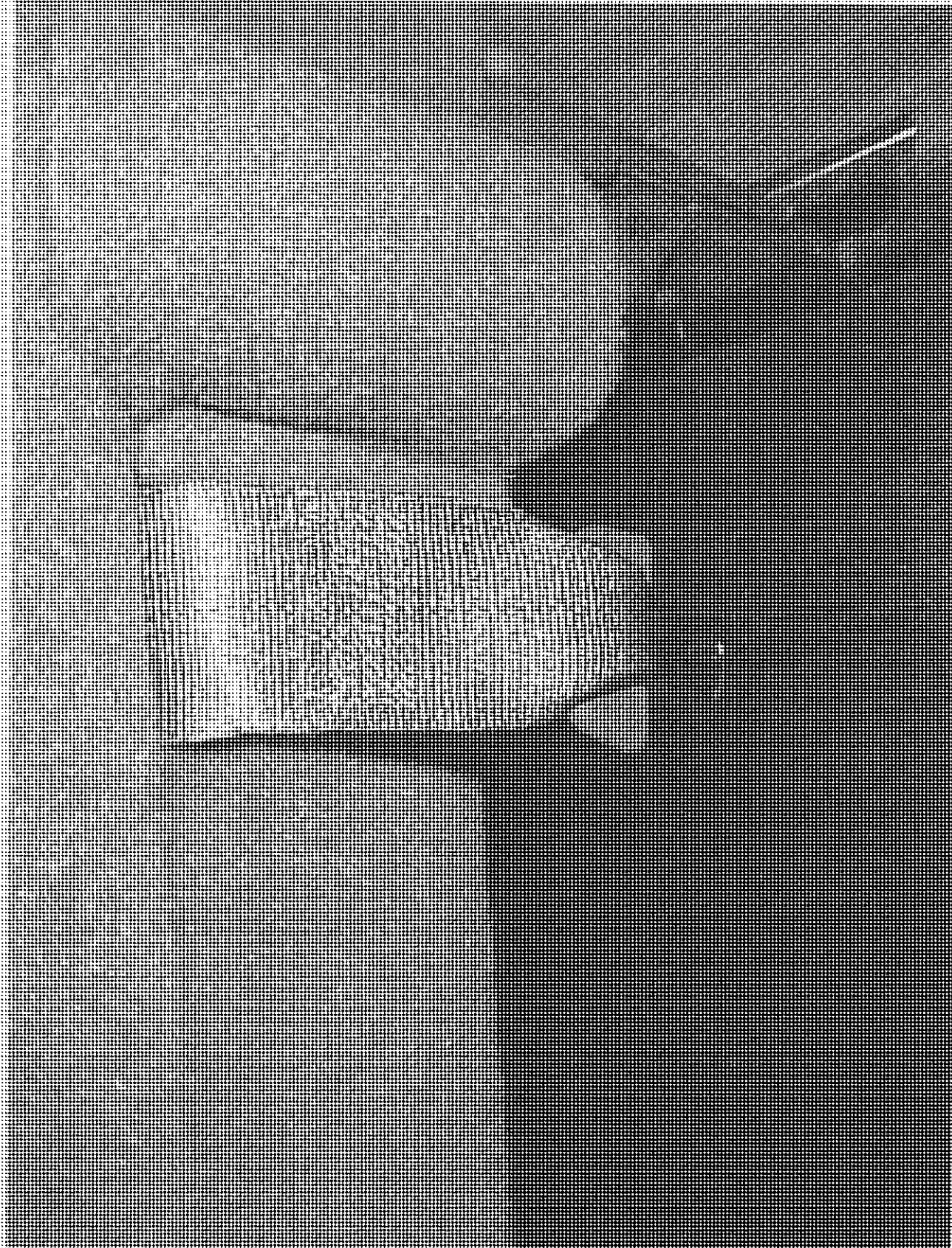
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.9
LEFT REAR VEHICLE TIE DOWN



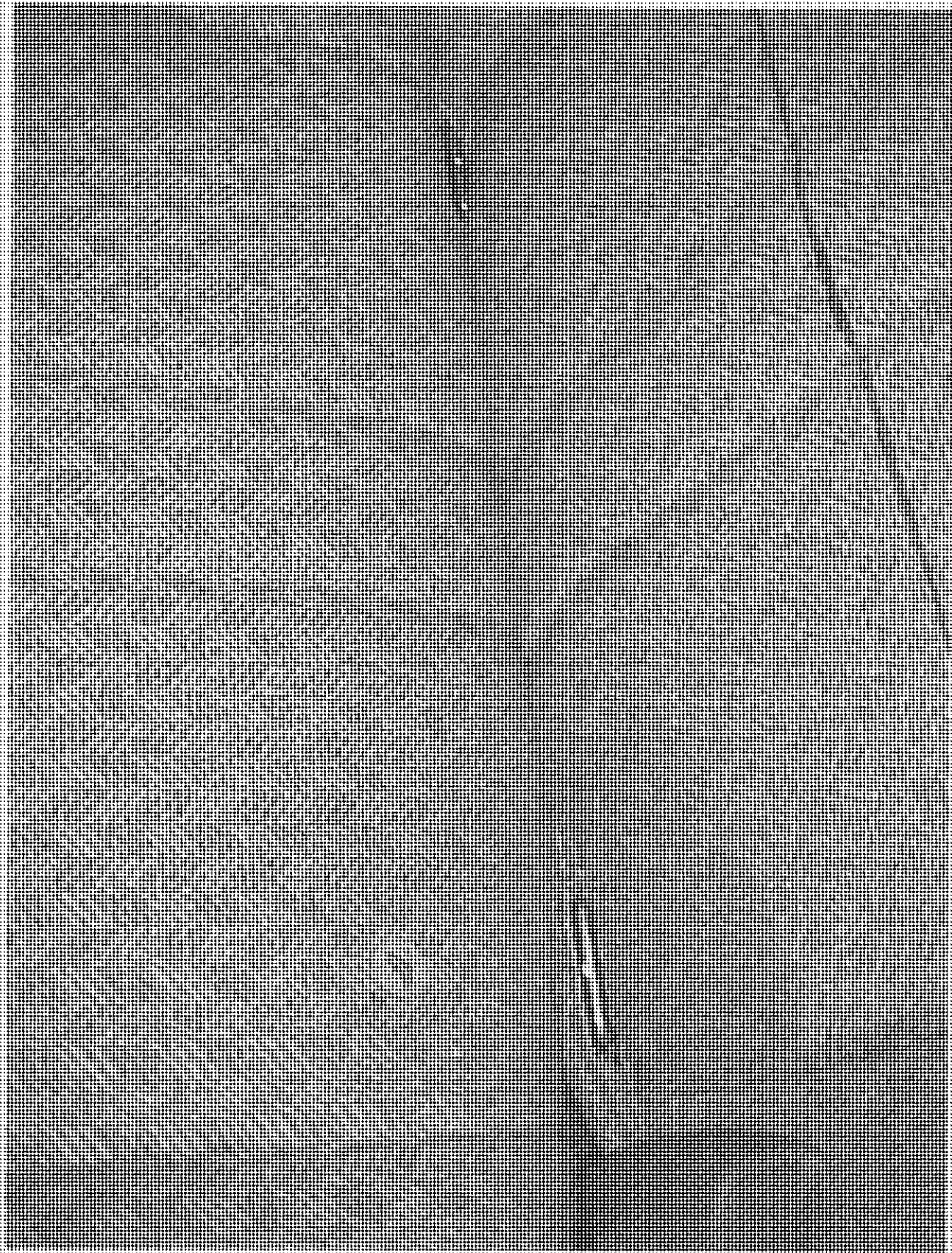
2004 CHEVROLET EXPRESS
NHESA NO. C40111
FMVSS NO. 225

FIGURE 5.10
PRE-TEST 2ND ROW RIGHT LOWER ANCHORS



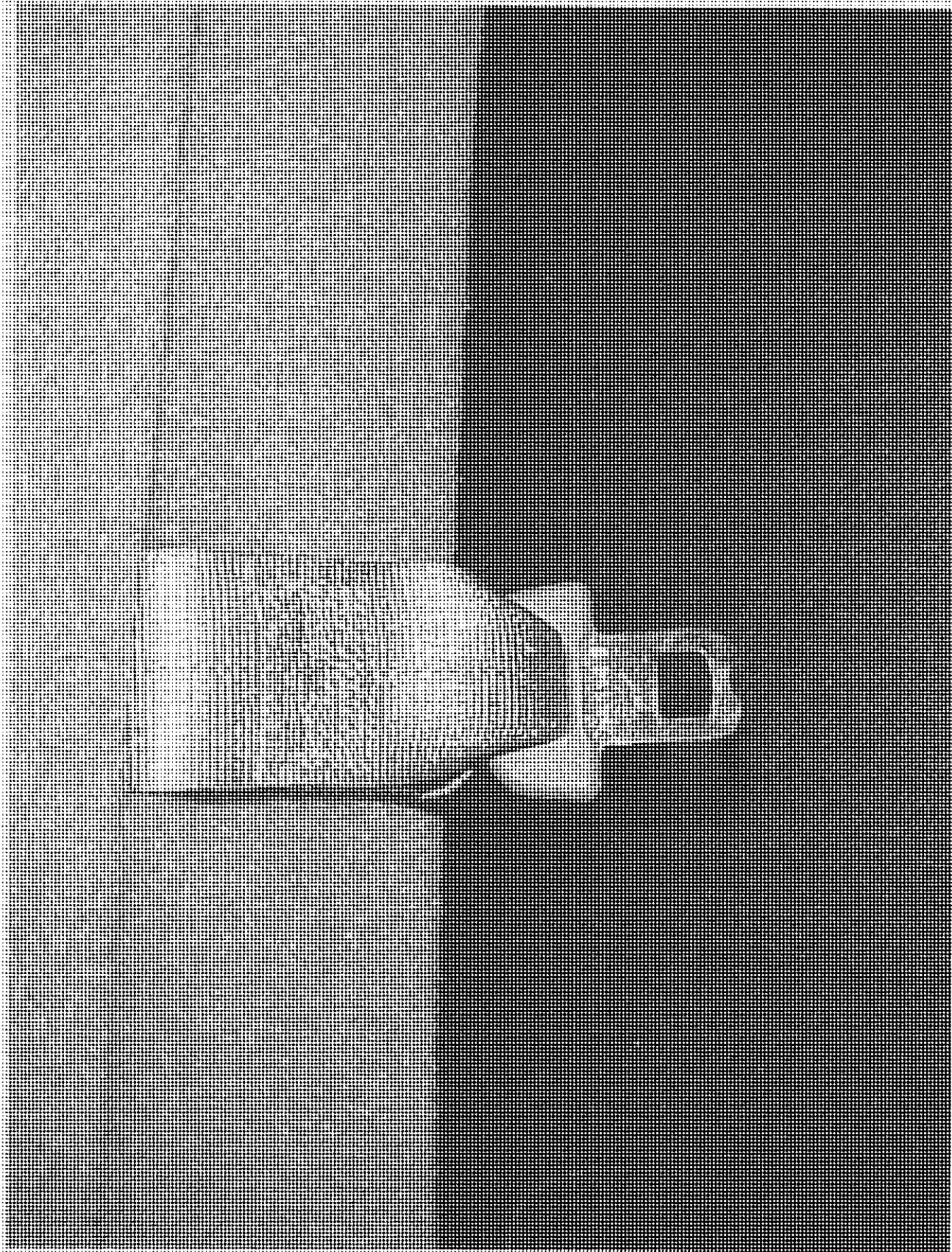
2004 CHEVROLET EXPRESS
NHTSA NO. Q460111
FMVSS NO. 225

FIGURE 5.11
PRE-TEST 2ND ROW RIGHT TOP TETHER
ANCHOR



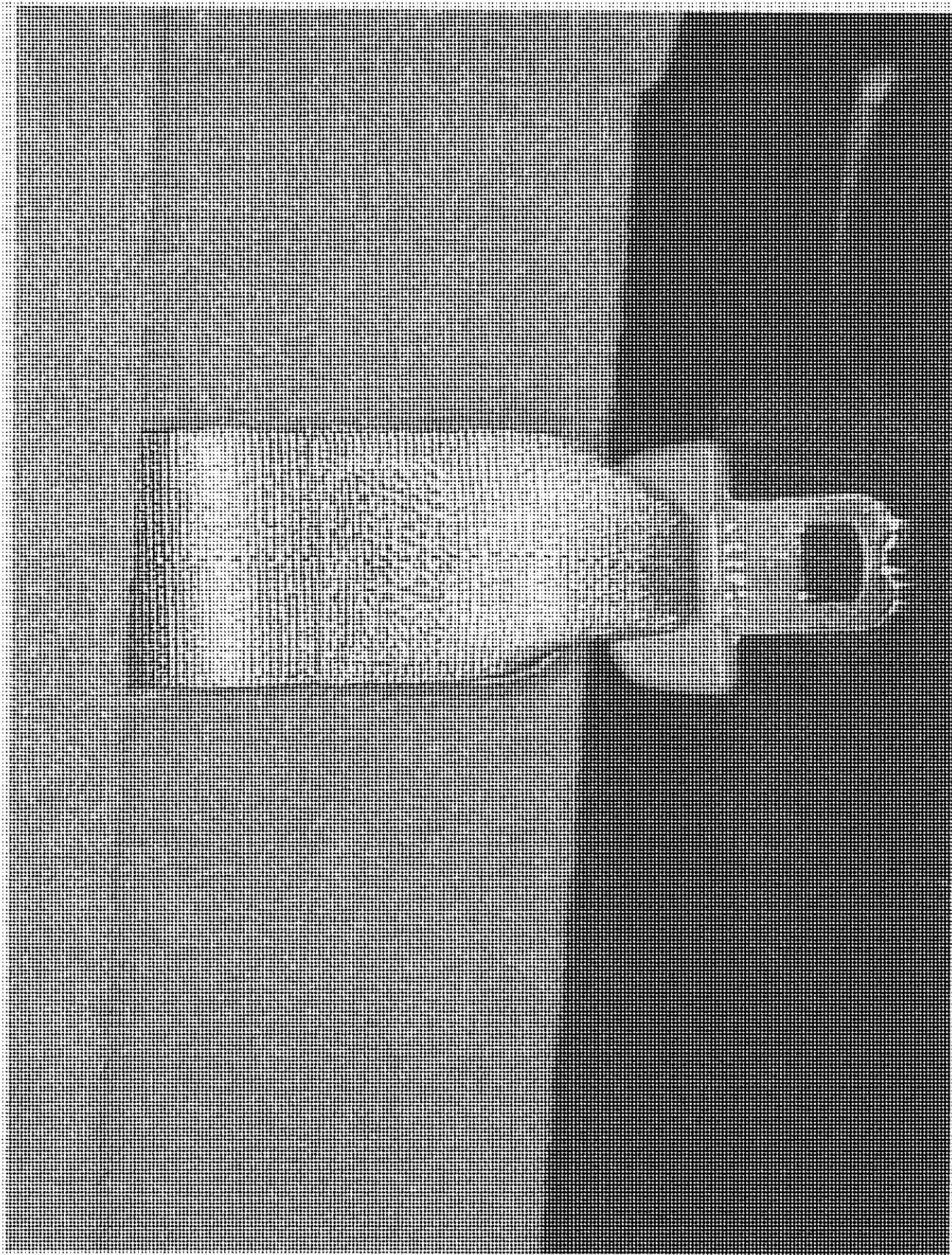
2004 CHEVROLET EXPRESS
NHTSA NO. Q40111
FMVSS NO. 225

FIGURE 5.12
PRE-TEST 2ND ROW LEFT LOWER ANCHORS



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.13
PRE-TEST 2ND ROW LEFT TOP TETHER
ANCHOR



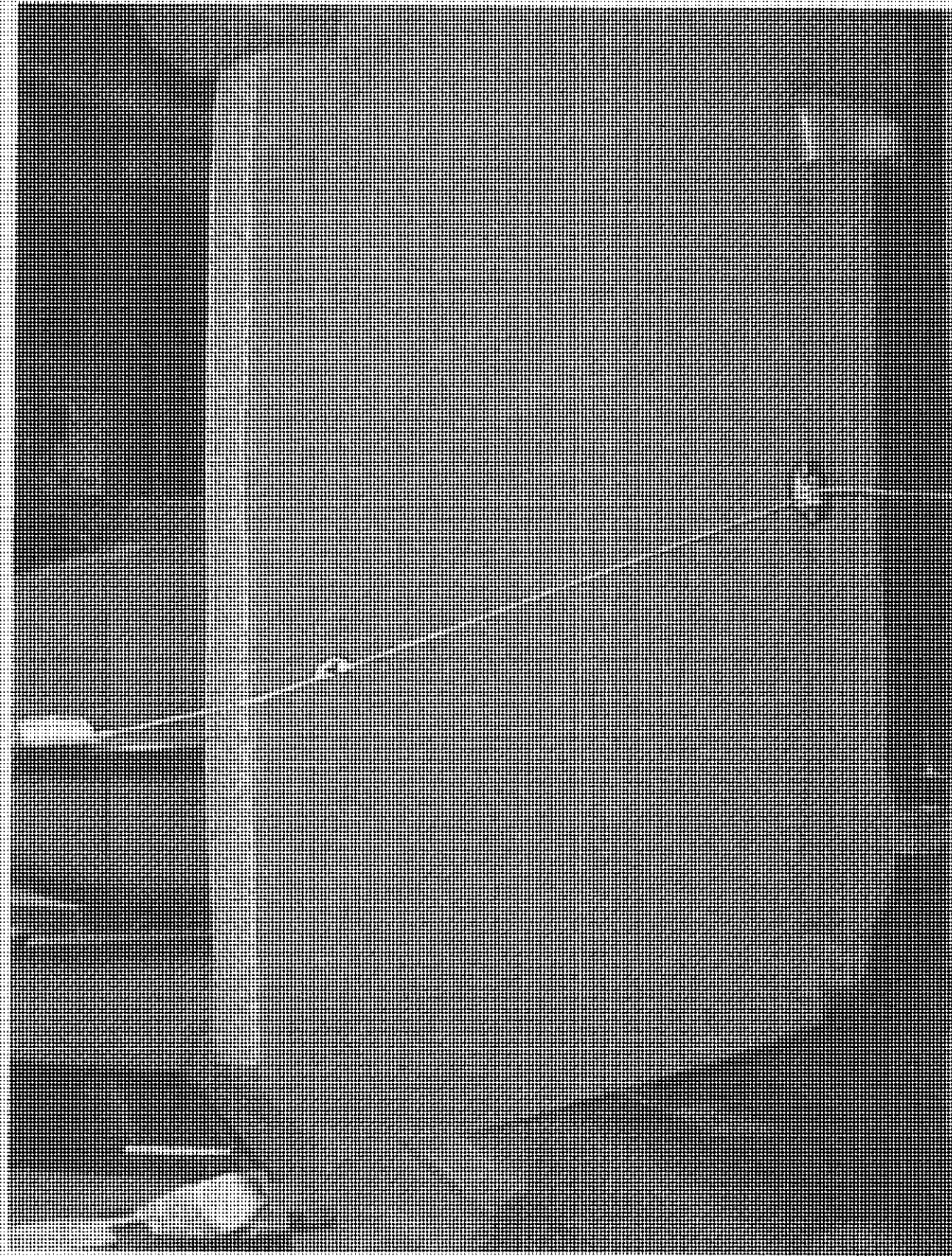
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.14
PRE-TEST 3RD ROW RIGHT TOP TETHER
ANCHOR



2006 CHEVROLET EXPRESS
AH/TA NO. C40111
FMVSS NO. 225

FIGURE 5.15
VIEW OF 2D TEMPLATE IN 2ND ROW LEFT SEAT



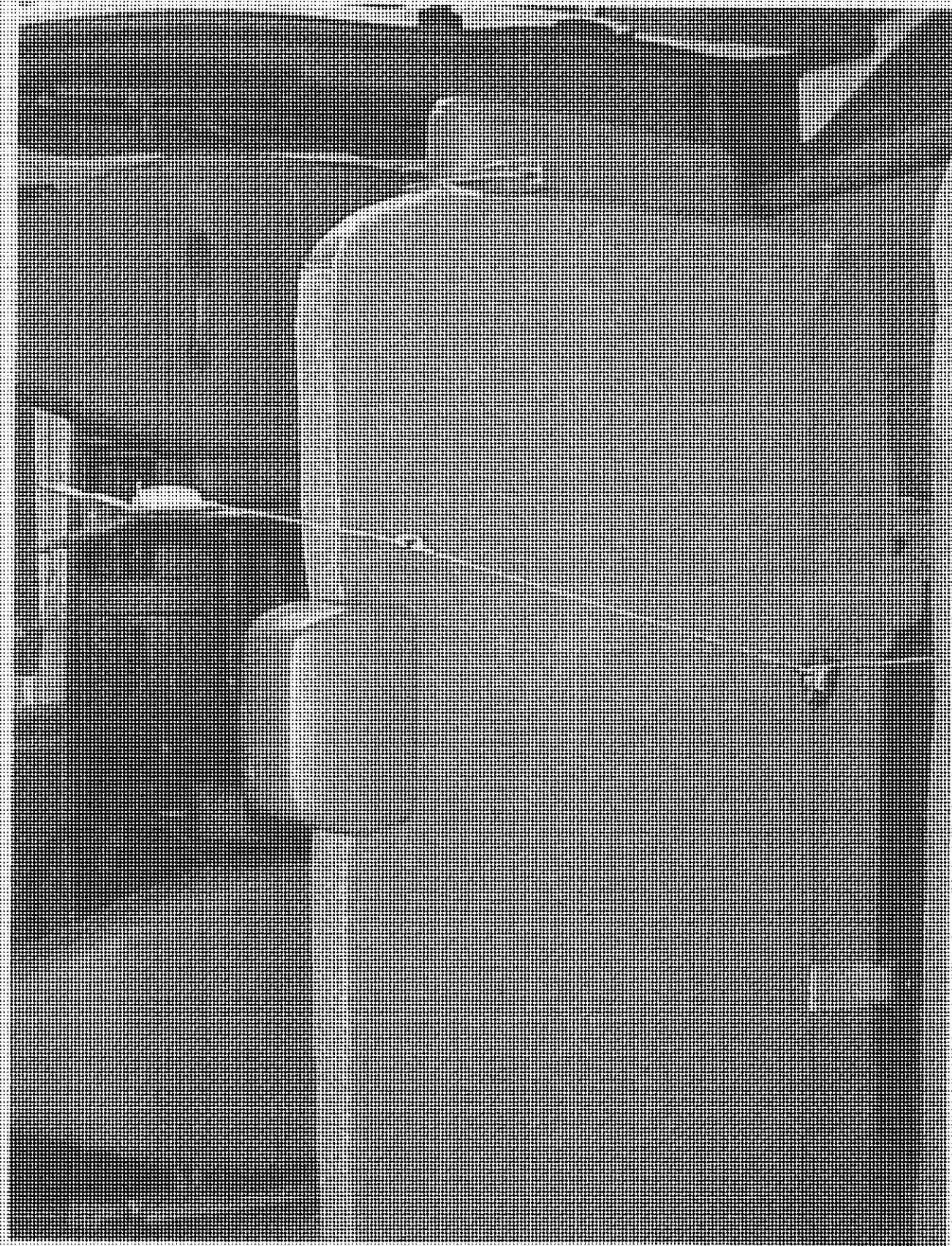
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.16
VIEW OF 2D TEMPLATE IN 2ND ROW LEFT SEAT



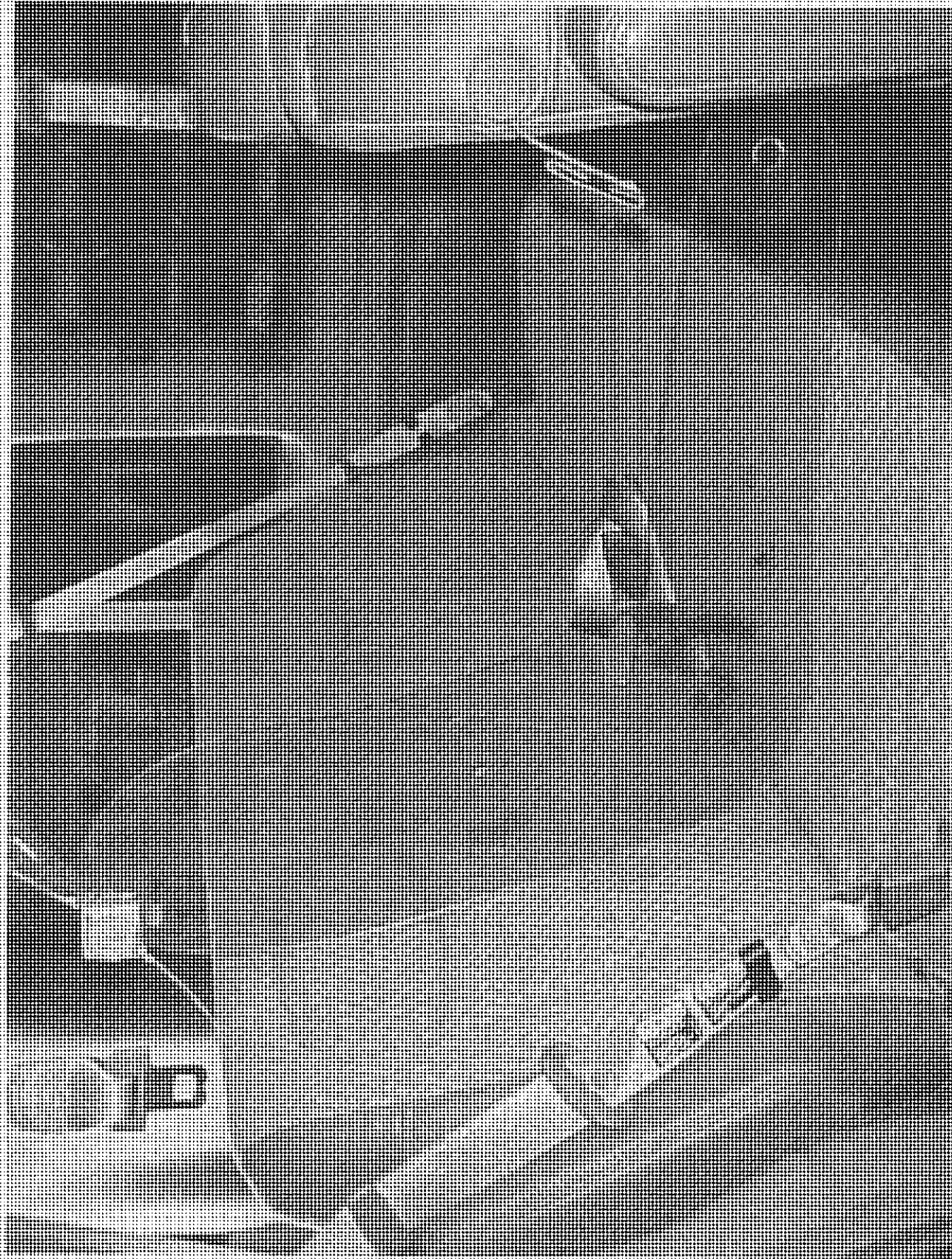
2004 CHEVROLET EXPRESS
NHTSA NO. CA00111
FMVSS NO. 225

FIGURE 5.17
VIEW OF 2D TEMPLATE IN 2ND ROW RIGHT
SEAT



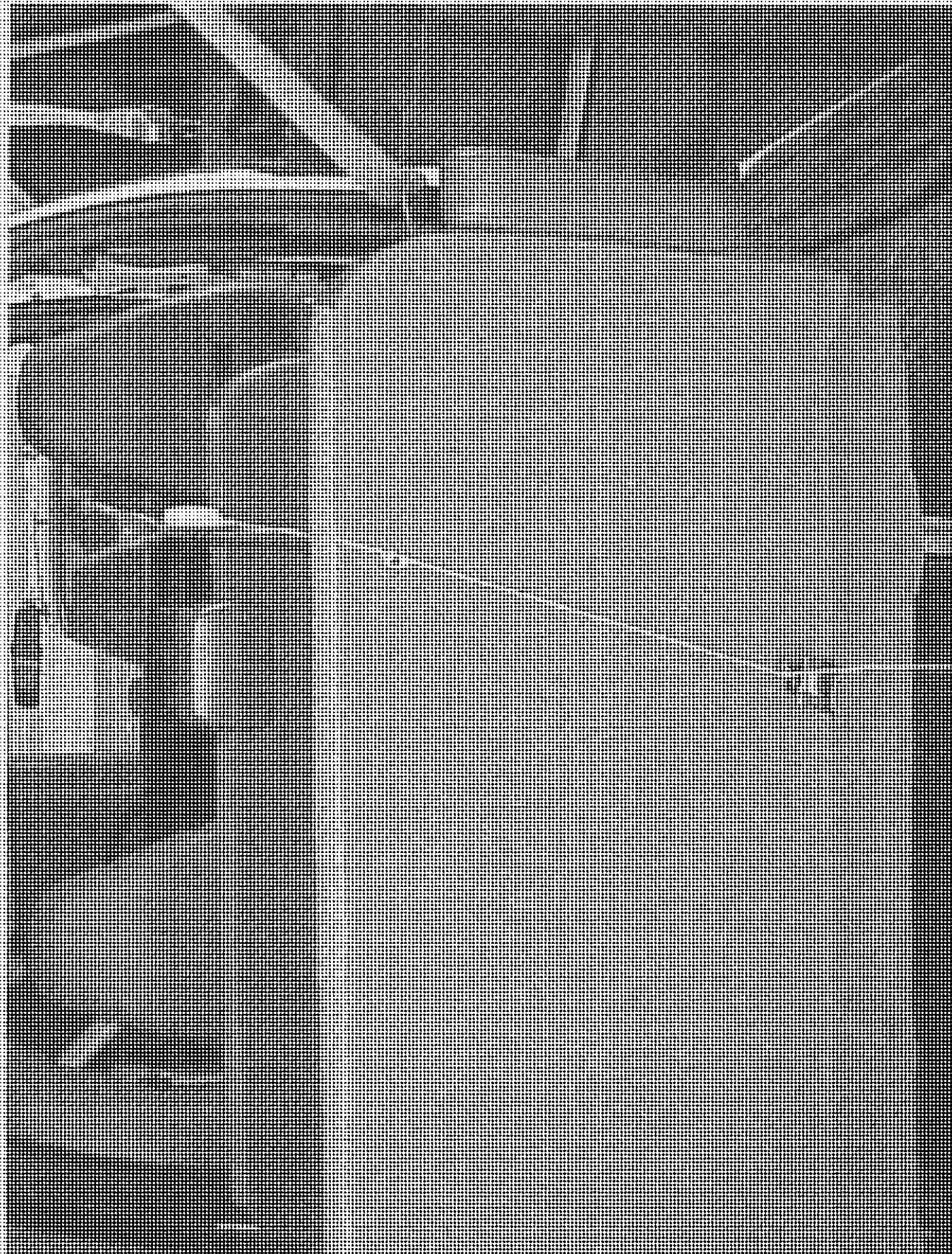
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.15
VIEW OF 2D TEMPLATE IN 2ND ROW RIGHT
SEAT



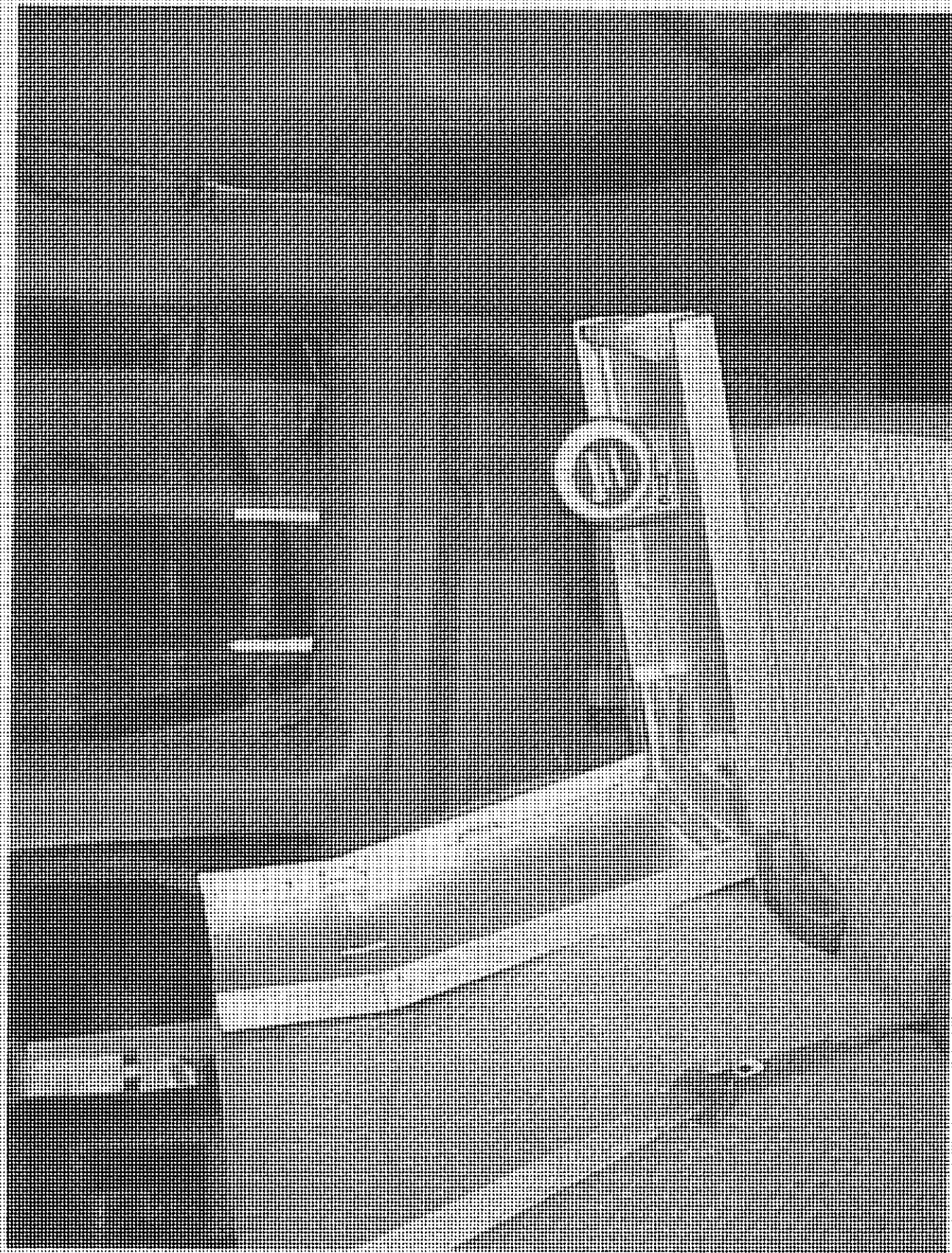
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.19
VIEW OF 2D TEMPLATE IN 3RD ROW RIGHT
SEAT



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.20
VIEW OF 2D TEMPLATE IN 3RD ROW RIGHT
SEAT



2004 CHEVROLET EXPRESS
M/TSA NO. C40111
F/VSS NO. 223

FIGURE 3.21
VIEW OF CR# IN 2ND ROW LEFT SEAT



2004 CHEVROLET EXPRESS
NHTSA NO. C60111
FMVSS NO. 225

FIGURE 5.22
VIEW OF CRF IN 2ND ROW RIGHT SEAT



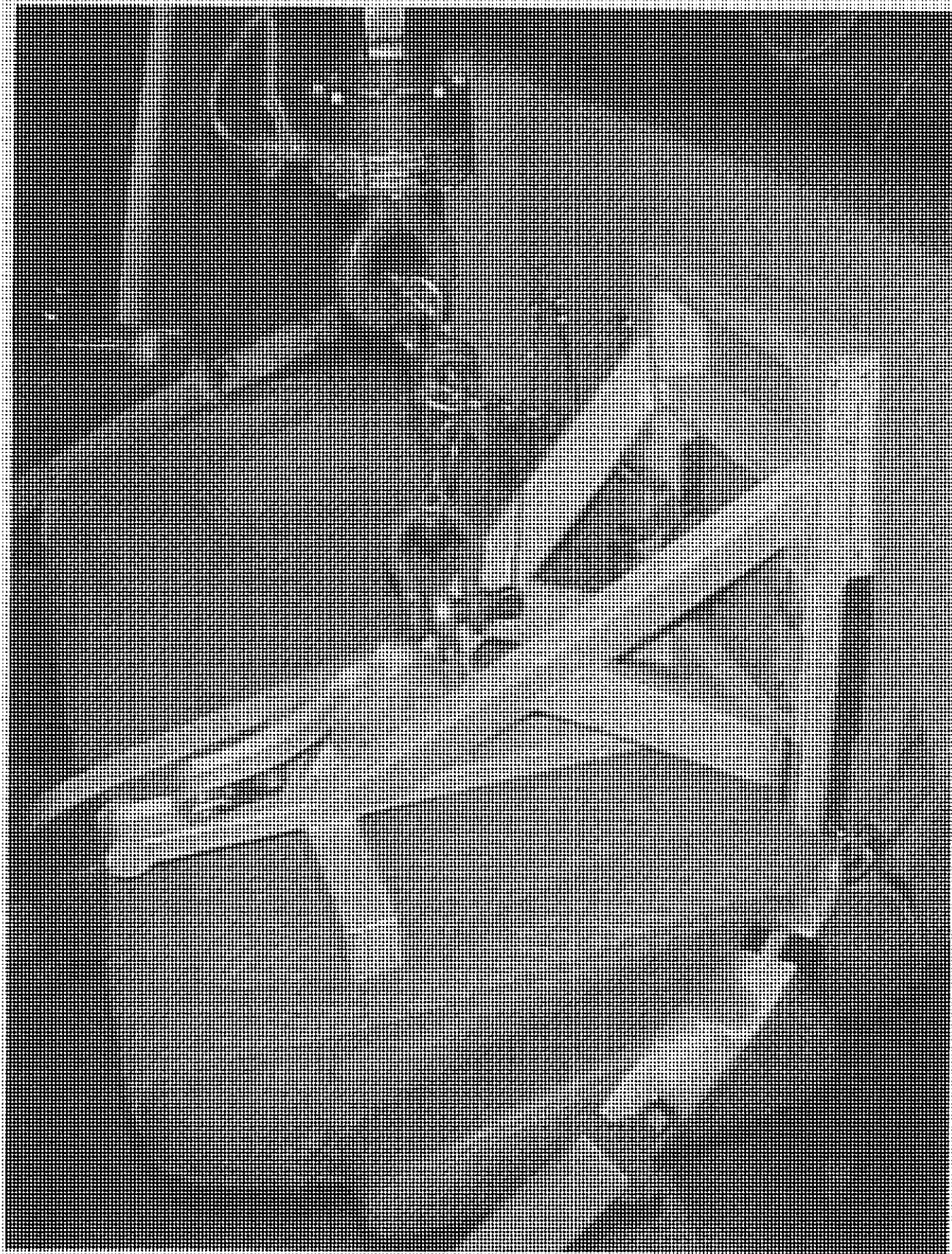
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.23
PRE-TEST SET-UP 2ND ROW LEFT POSITION



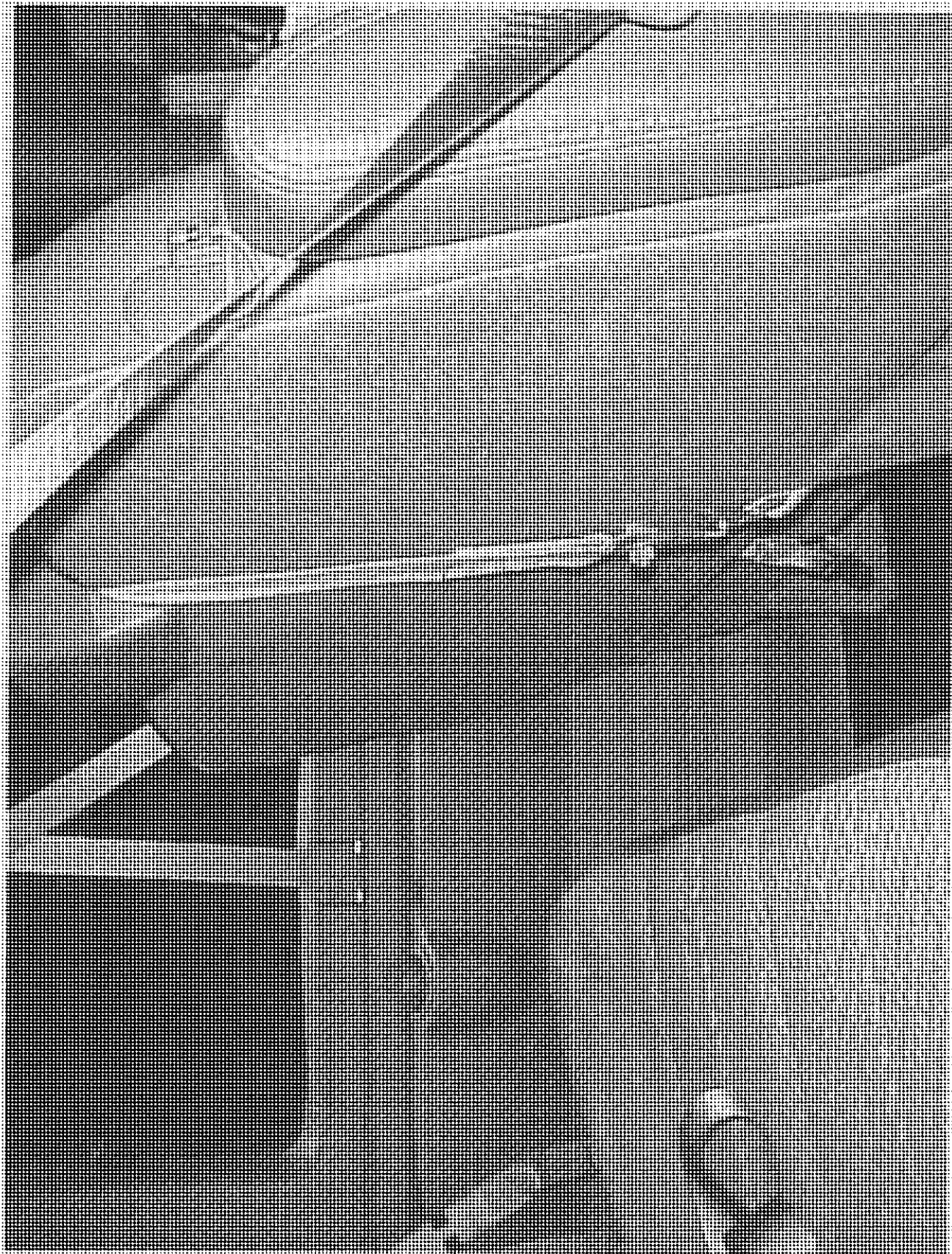
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.24
POST TEST 2ND ROW LEFT POSITION



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.25
PRE-TEST SET-UP 2ND ROW RIGHT SIDE



2004 CHEVROLET EXPRESS
MHTSA NO. C40141
MVSS NO. 225

FIGURE 3.20
PRE-TEST SET-UP 2ND ROW RIGHT POSITION

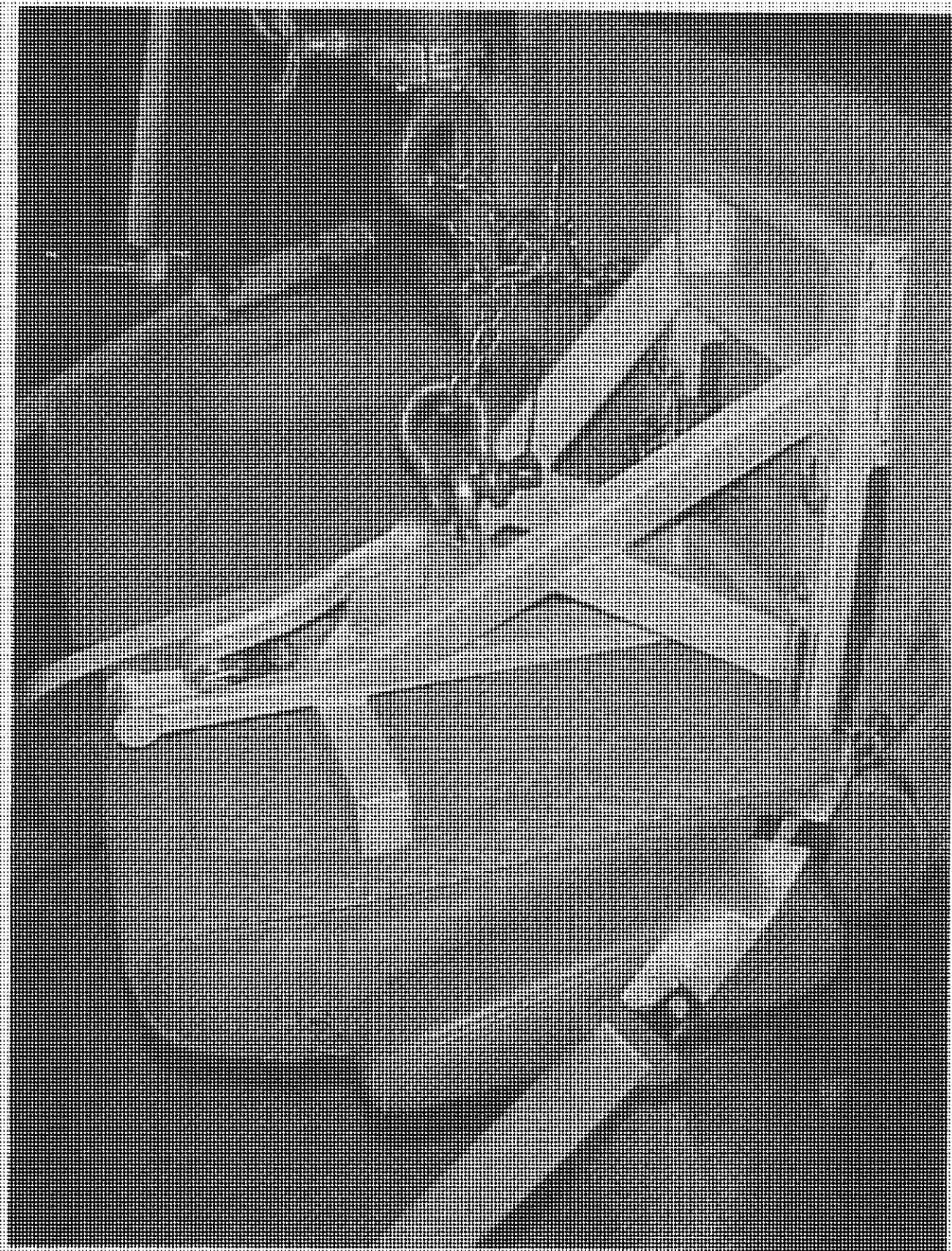
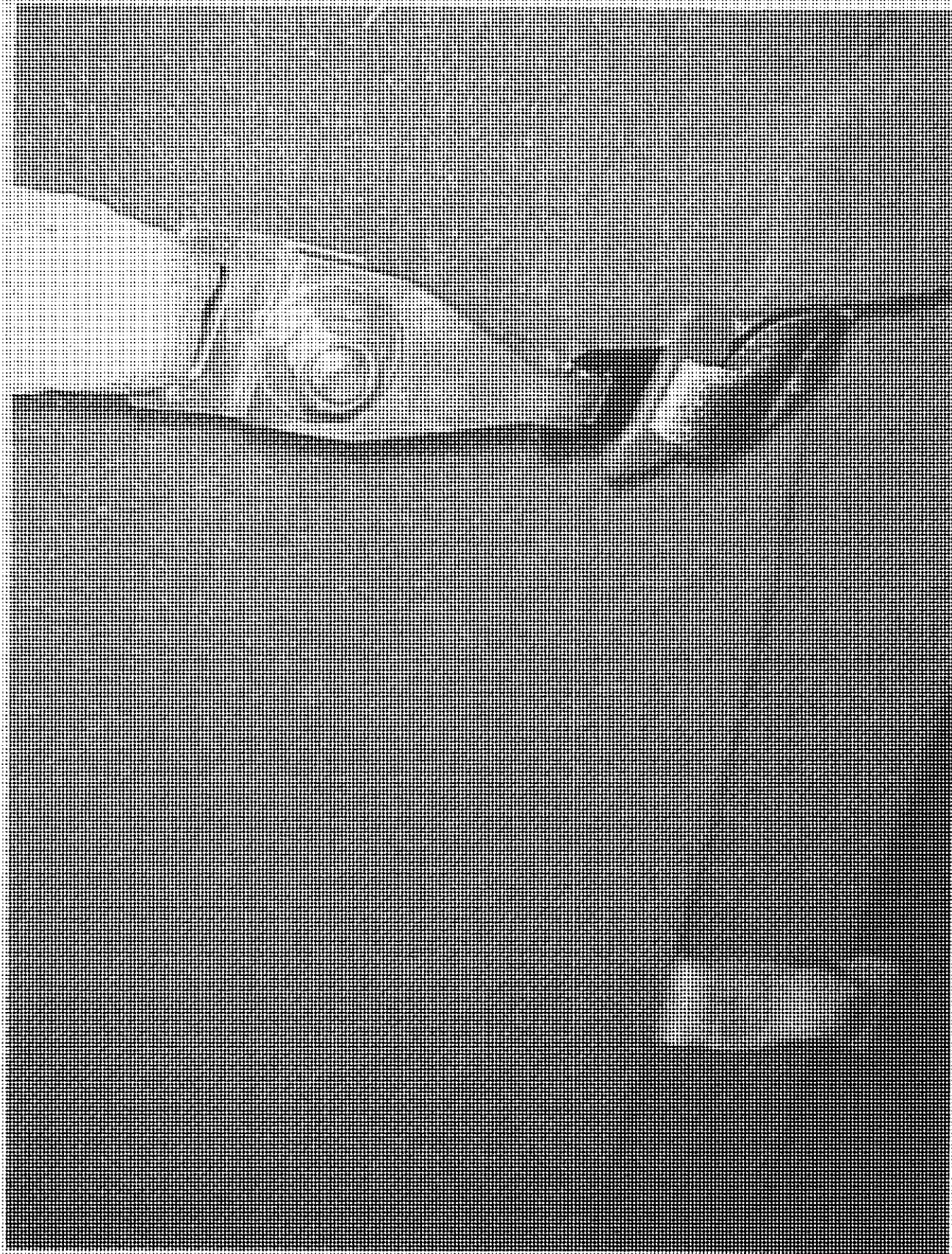


FIGURE 5.27
POST TEST 2ND ROW RIGHT POSITION

2004 CHEVROLET EXPRESS
NHTSA NO C40111
FMVSS NO 225



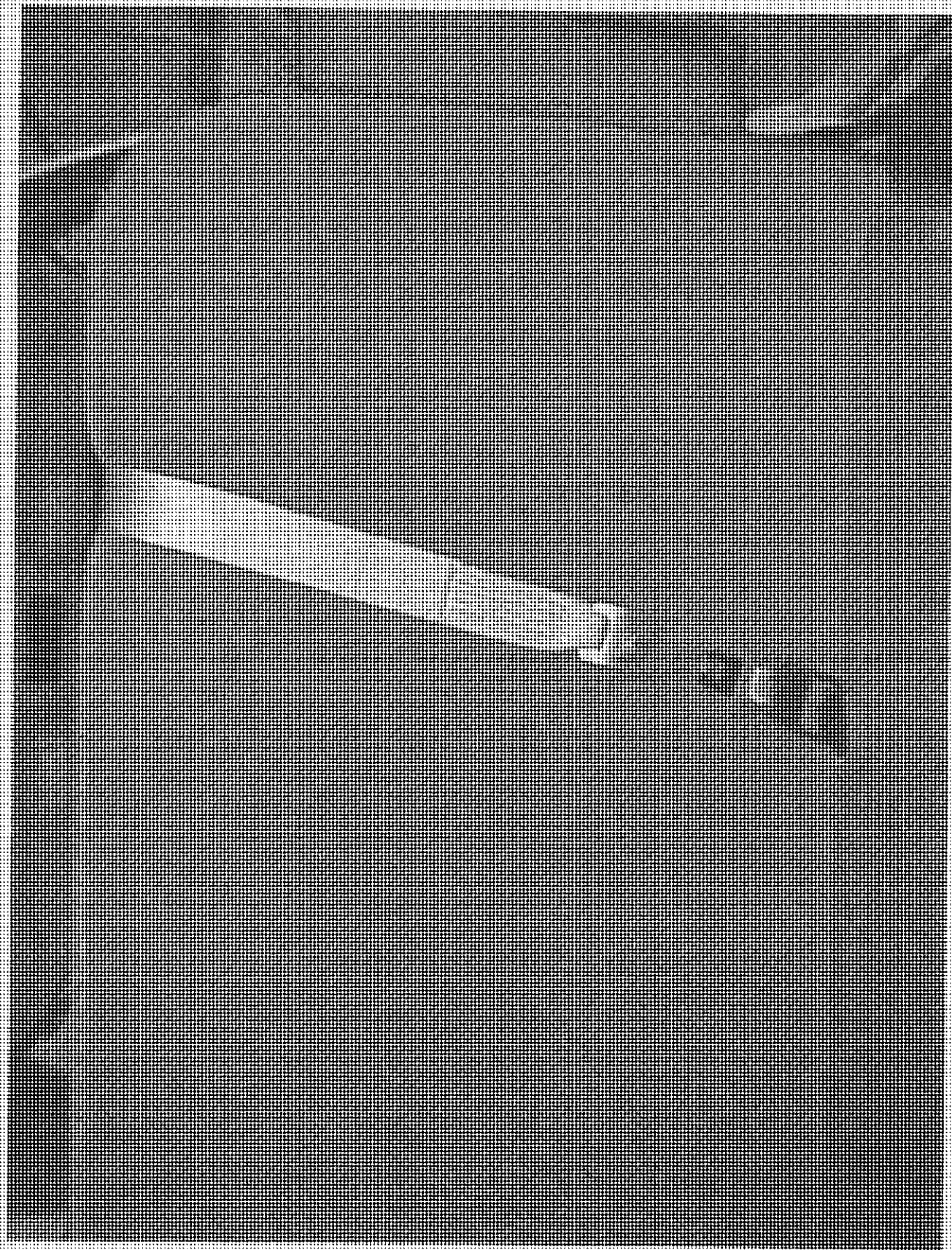
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.28
POST TEST 2ND ROW RIGHT POSITION



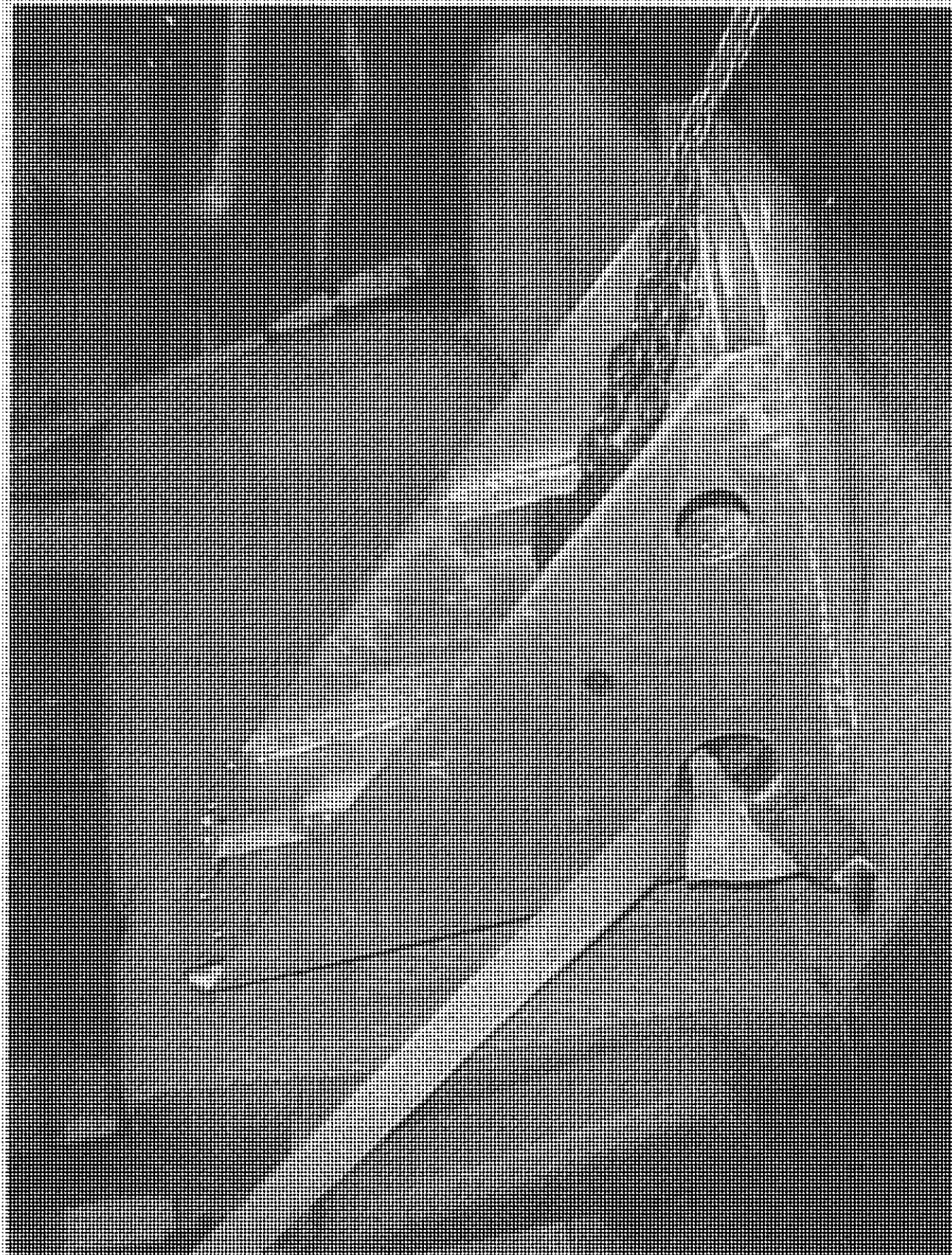
2004 CHEVROLET EXPRESS
NHTSA NO. C60111
FMVSS NO. 225

FIGURE 5.29
PRE-TEST SET-UP 3RD ROW RIGHT POSITION



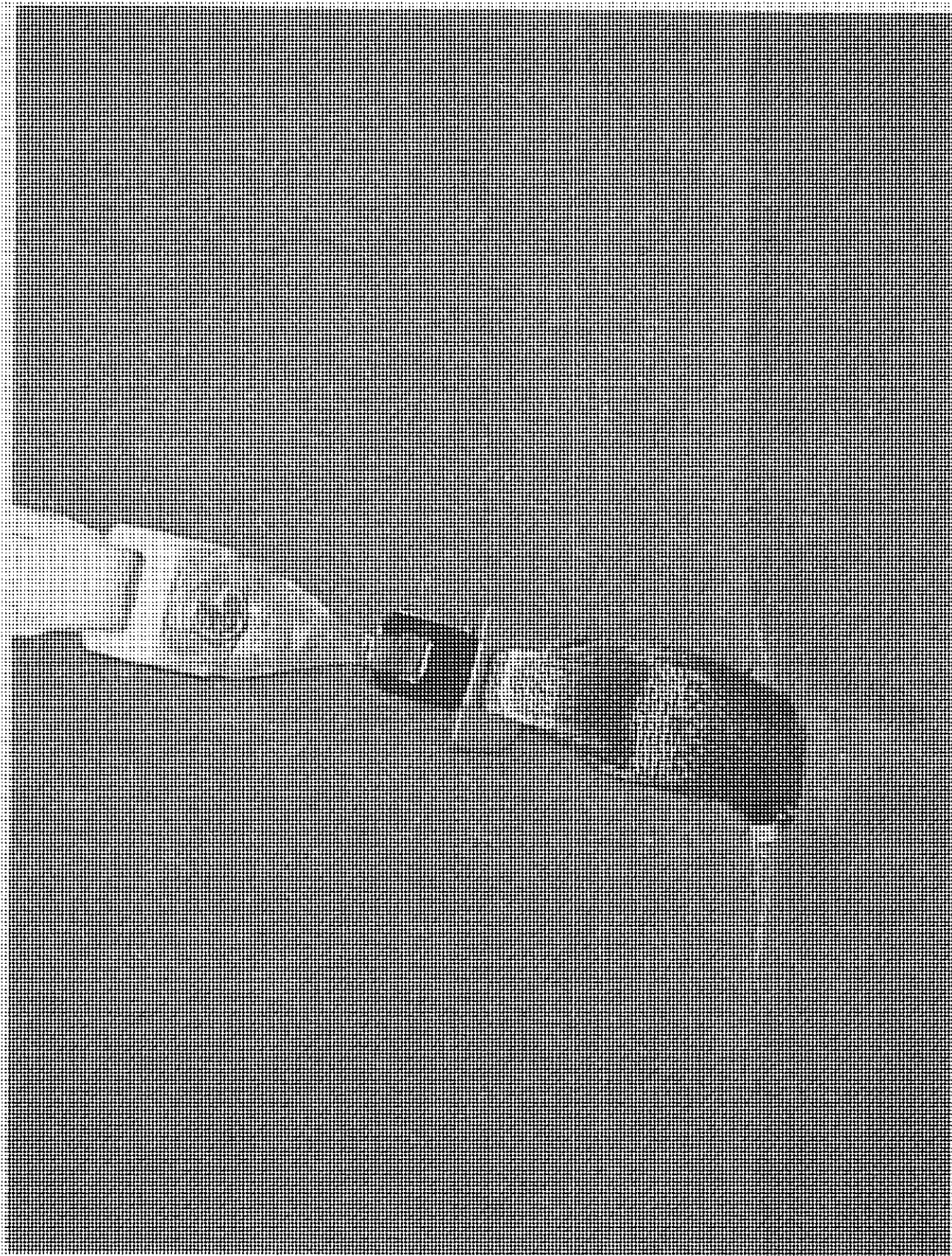
2004 CHEVROLET EXPRESS
NHTSA NO. C40511
FMVSS NO. 225

FIGURE 5.30
PRE-TEST SET-UP 3RD ROW RIGHT POSITION



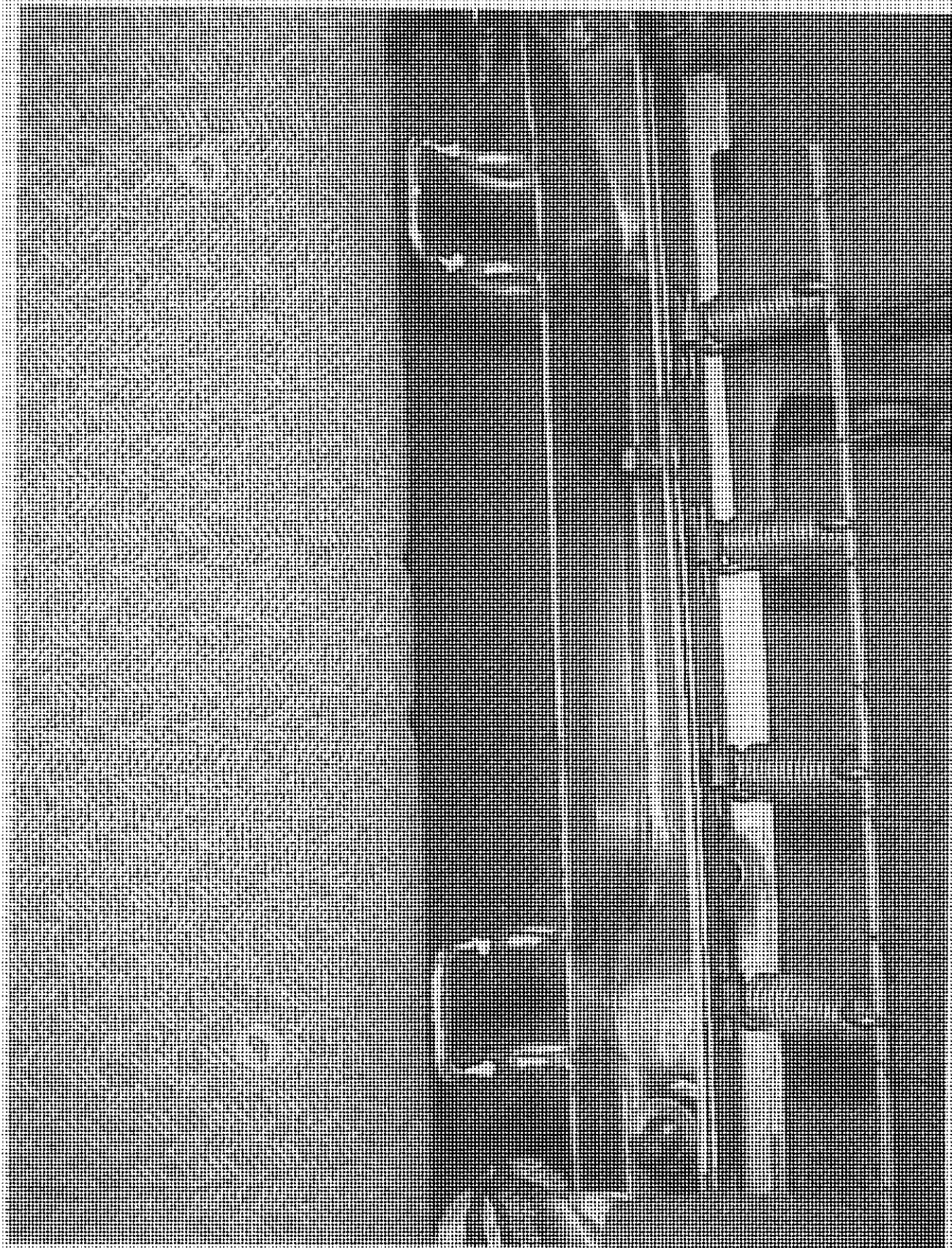
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 226

FIGURE 5.31
POST TEST 3RD ROW RIGHT POSITION



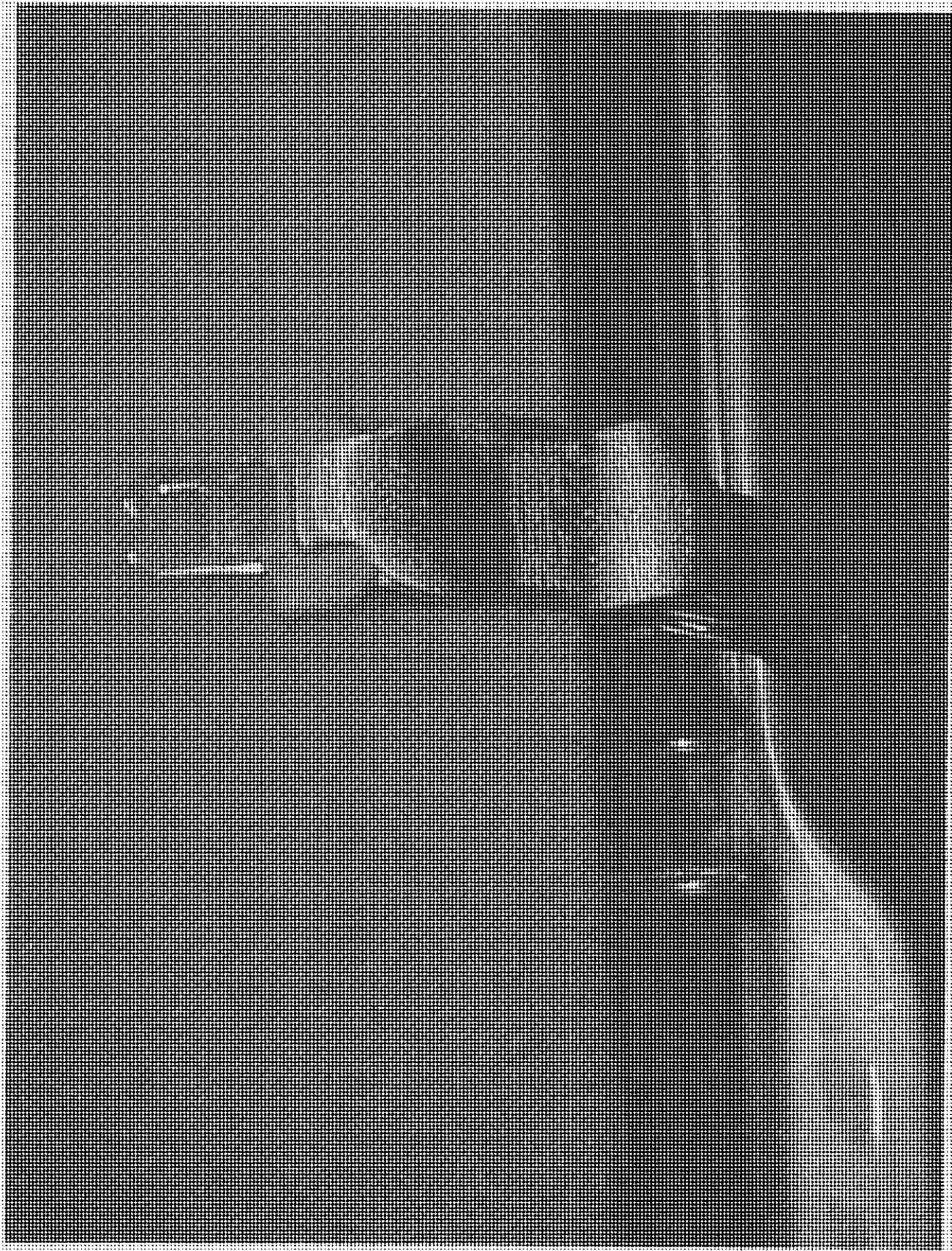
2004 CHEVROLET EXPRESS
NHISA NO. C40111
FMVSS NO. 225

FIGURE 5.32
POST TEST 3RD ROW RIGHT POSITION



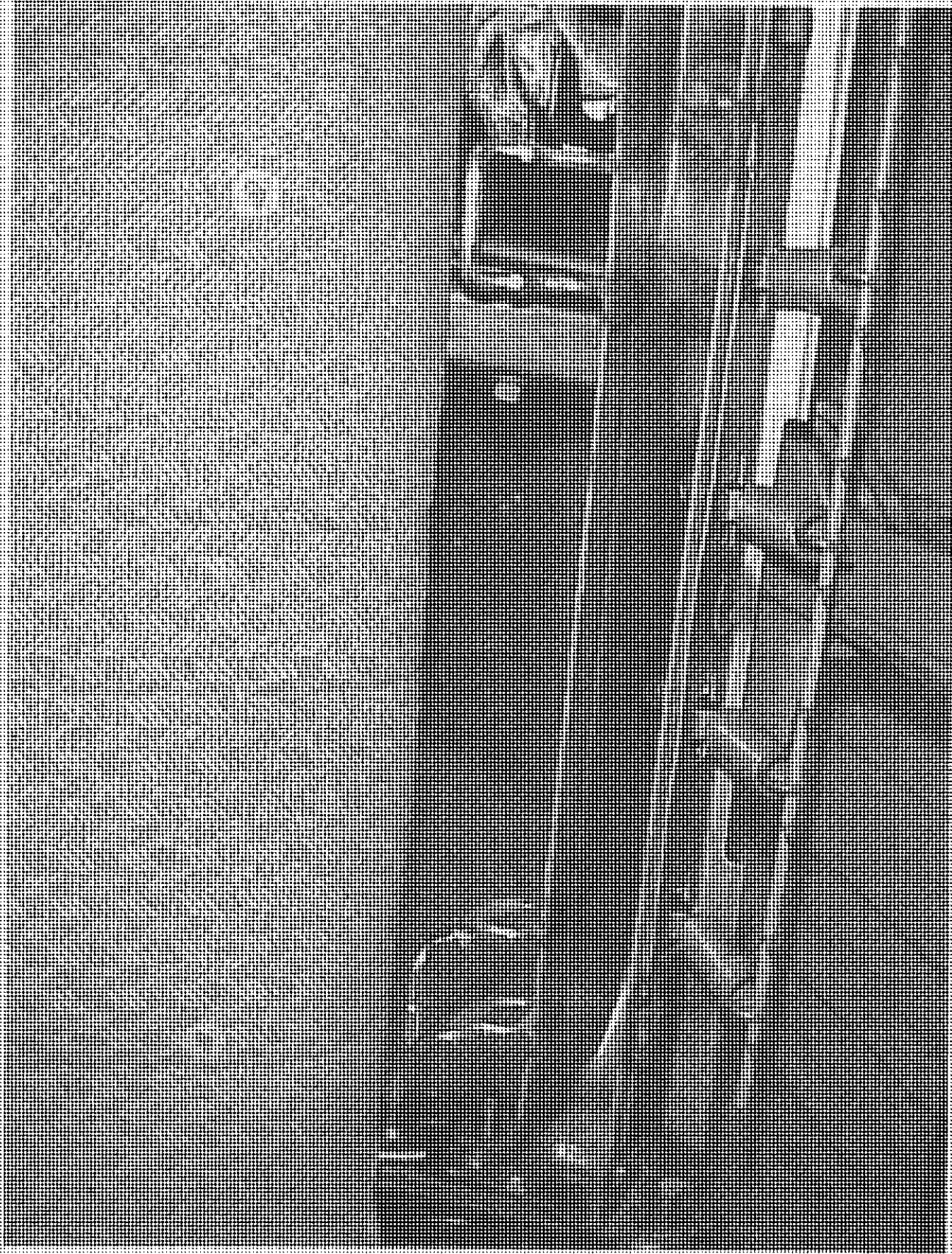
2004 CHEVROLET EXPRESS
NHTSA NO. C60111
FMVSS NO. 225

FIGURE 5.33
POST TEST 2ND ROW LEFT LOWER ANCHORS



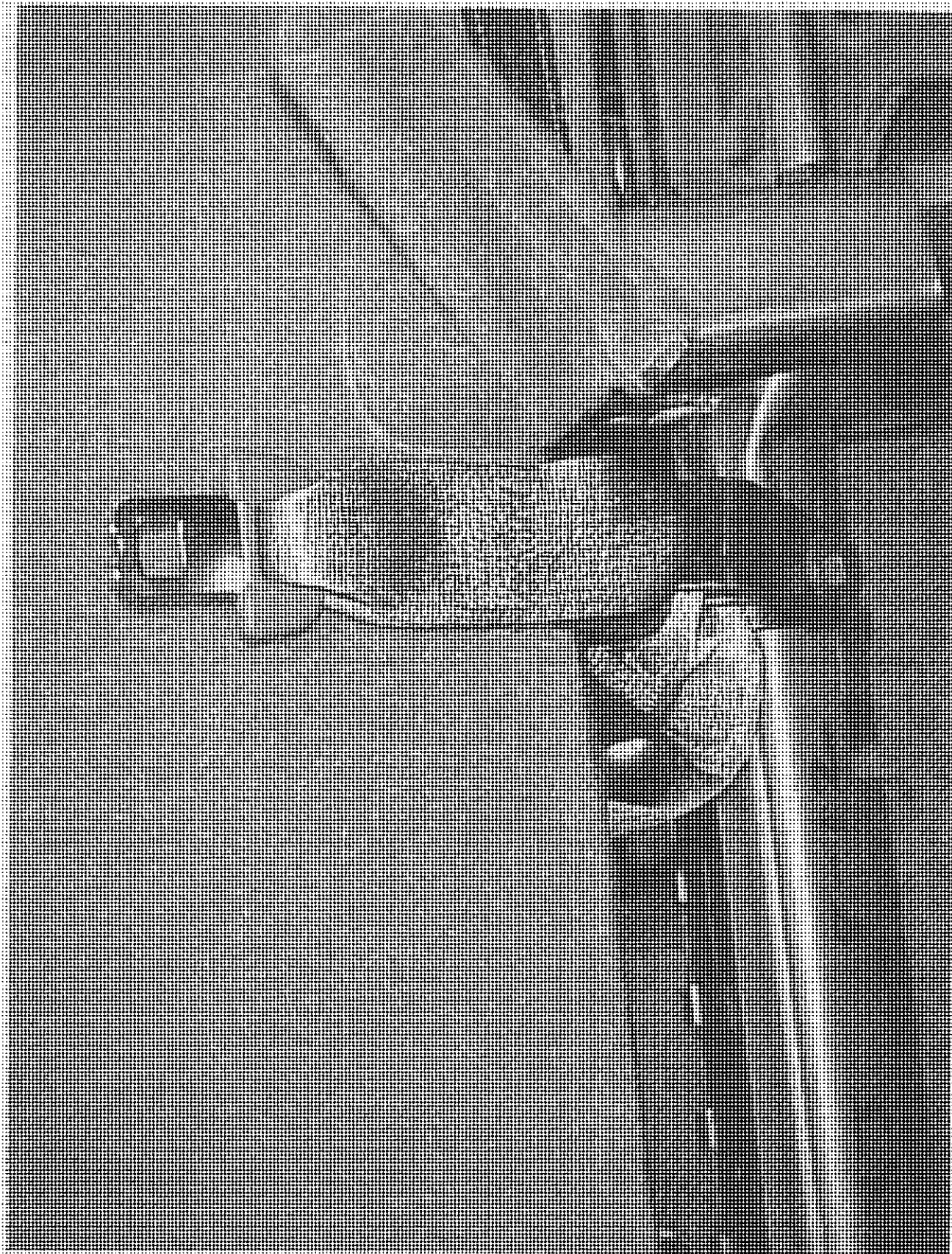
2004 CHEVROLET EXPRESS
AHMSA NO. C40111
FMVSS NO. 225

FIGURE 5.36
POST TEST 2ND ROW LEFT TOP TETHER
ANCHOR



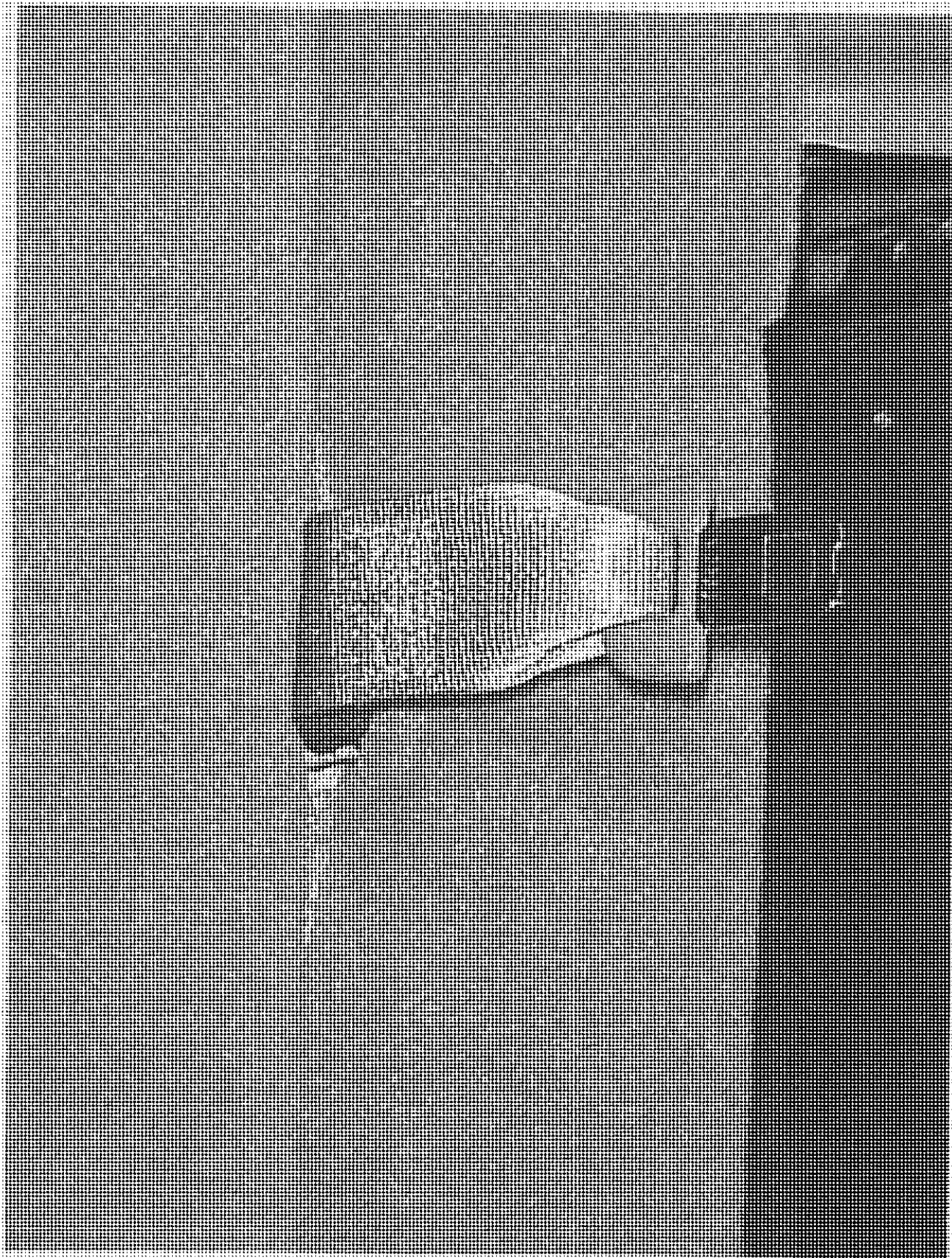
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.35
POST TEST 2ND ROW RIGHT LOWER ANCHORS



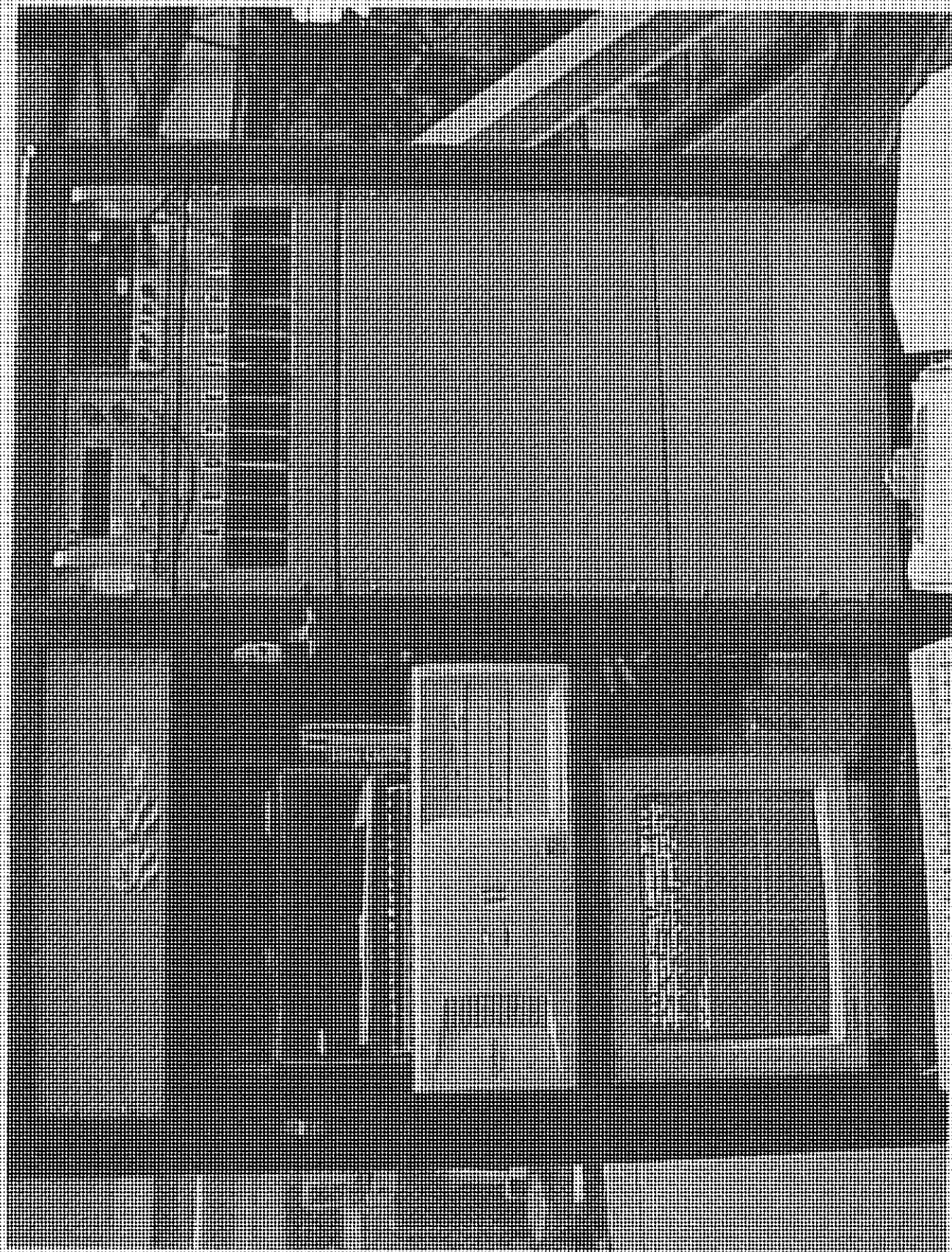
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.36
POST TEST 2ND ROW RIGHT TOP TETHER
ANCHOR



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

FIGURE 5.37
POST TEST 3RD ROW RIGHT TOP TETHER
ANCHOR



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 225

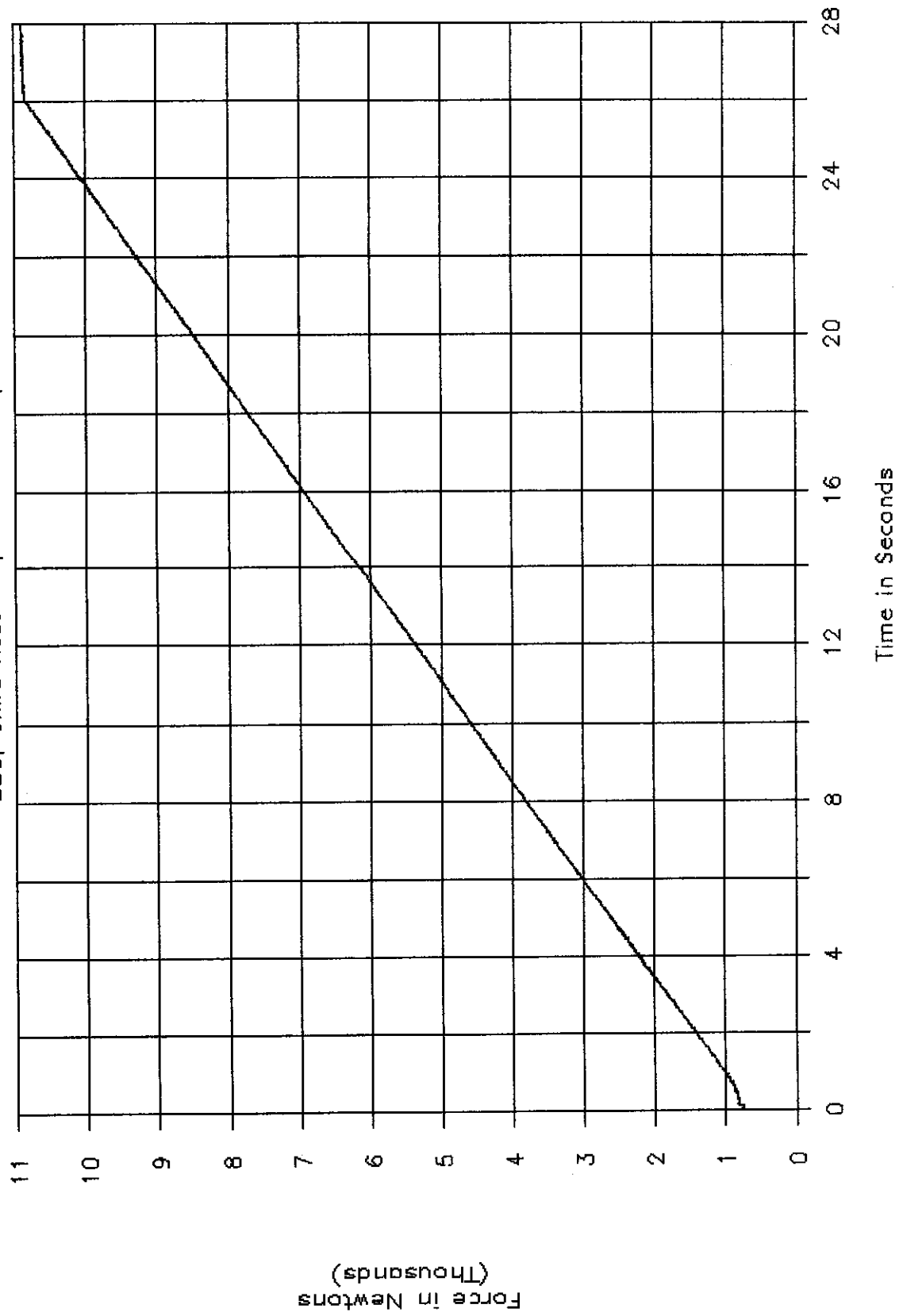
FIGURE 5.38
LOAD SYSTEM CONTROL AND DATA RECORDING
DEVICE IN POSITION

SECTION 6

PLOTS

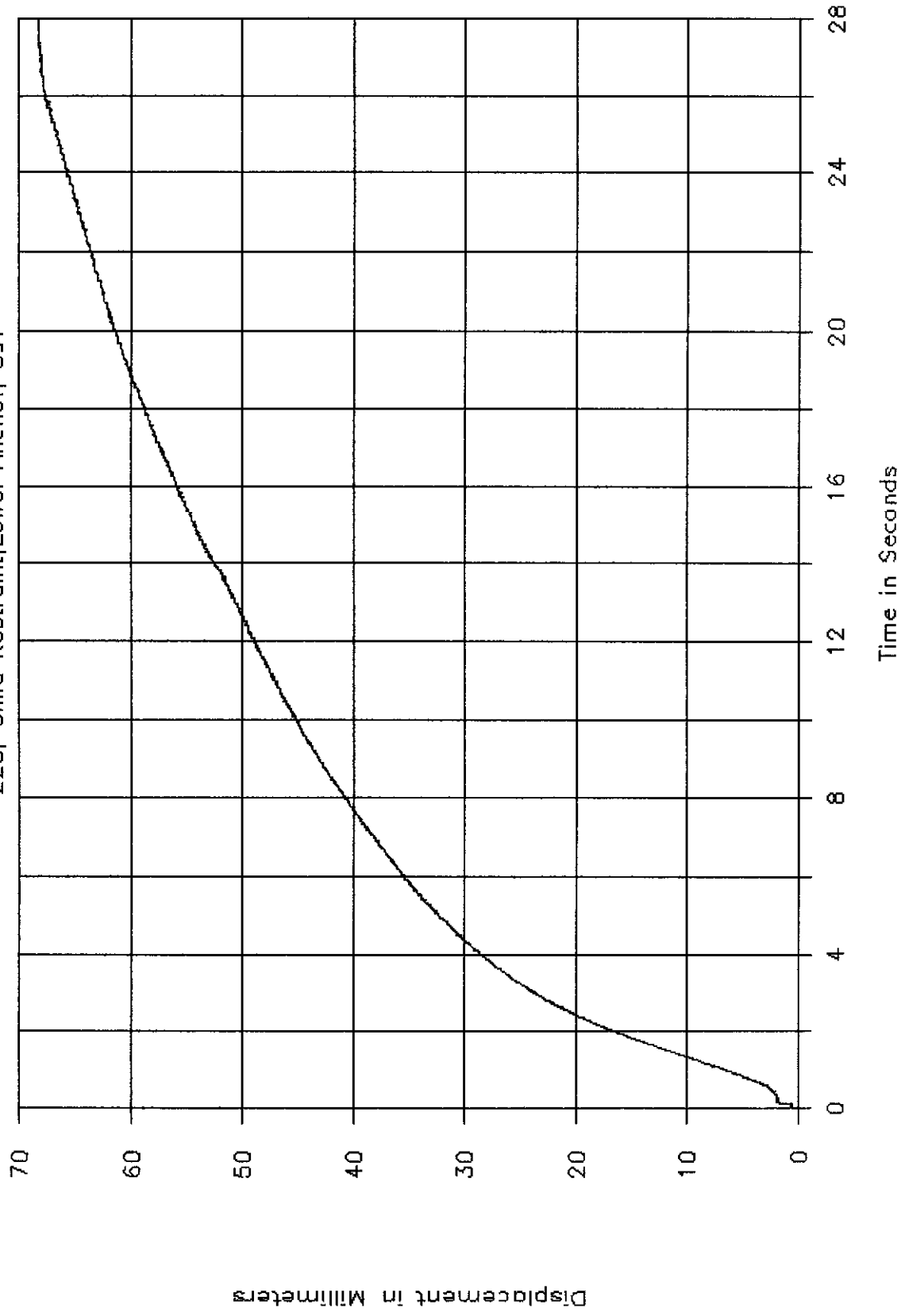
GTL 5259, NHTSA C40111

225, Child Restraint, Lower Anchor, S9.



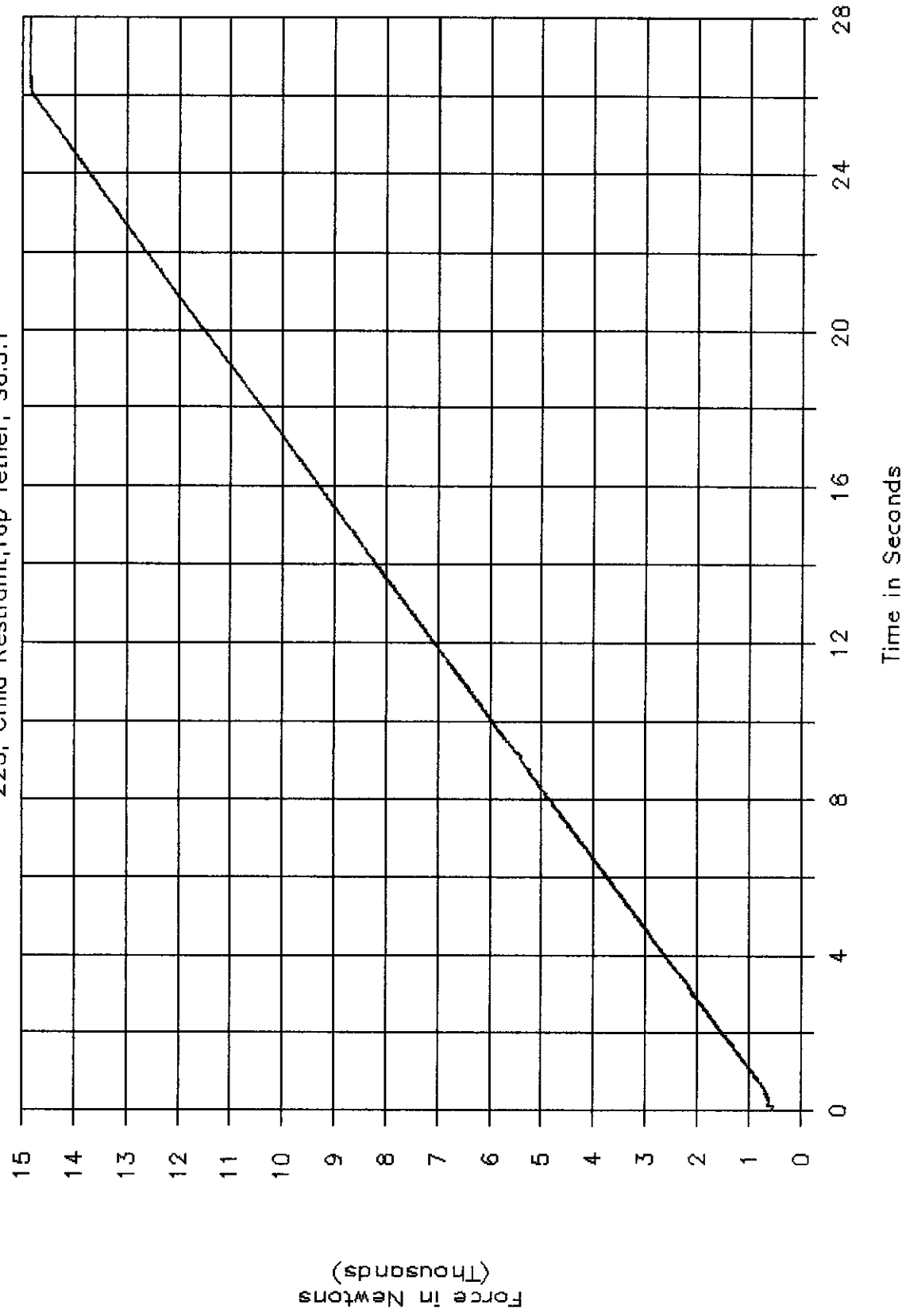
GTL 5259, NHTSA C40111

225, Child Restraint, Lower Anchor, S9.



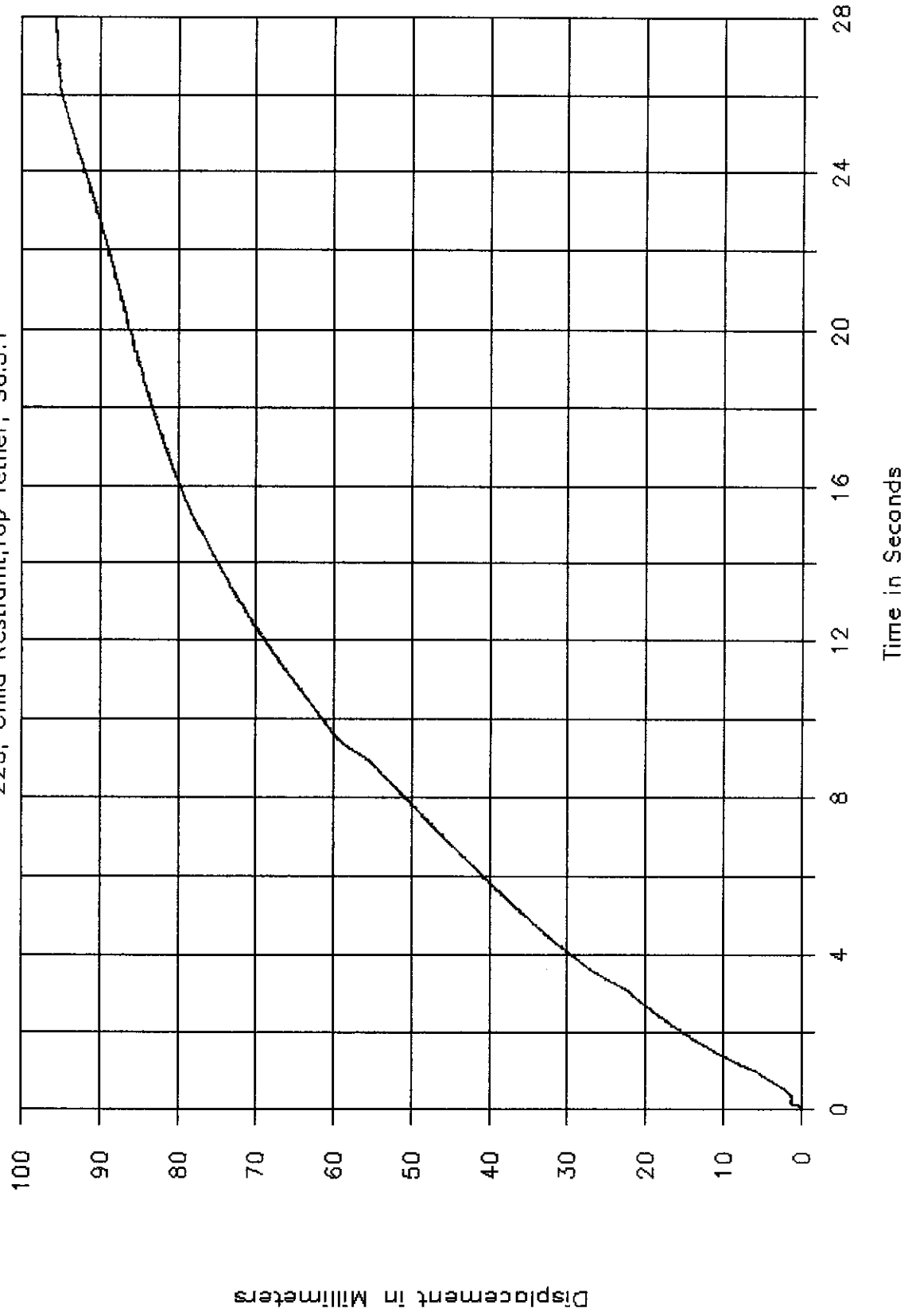
GTL 5260, NHTSA C40111

225, Child Restraint, Top Tether, S6.3.1



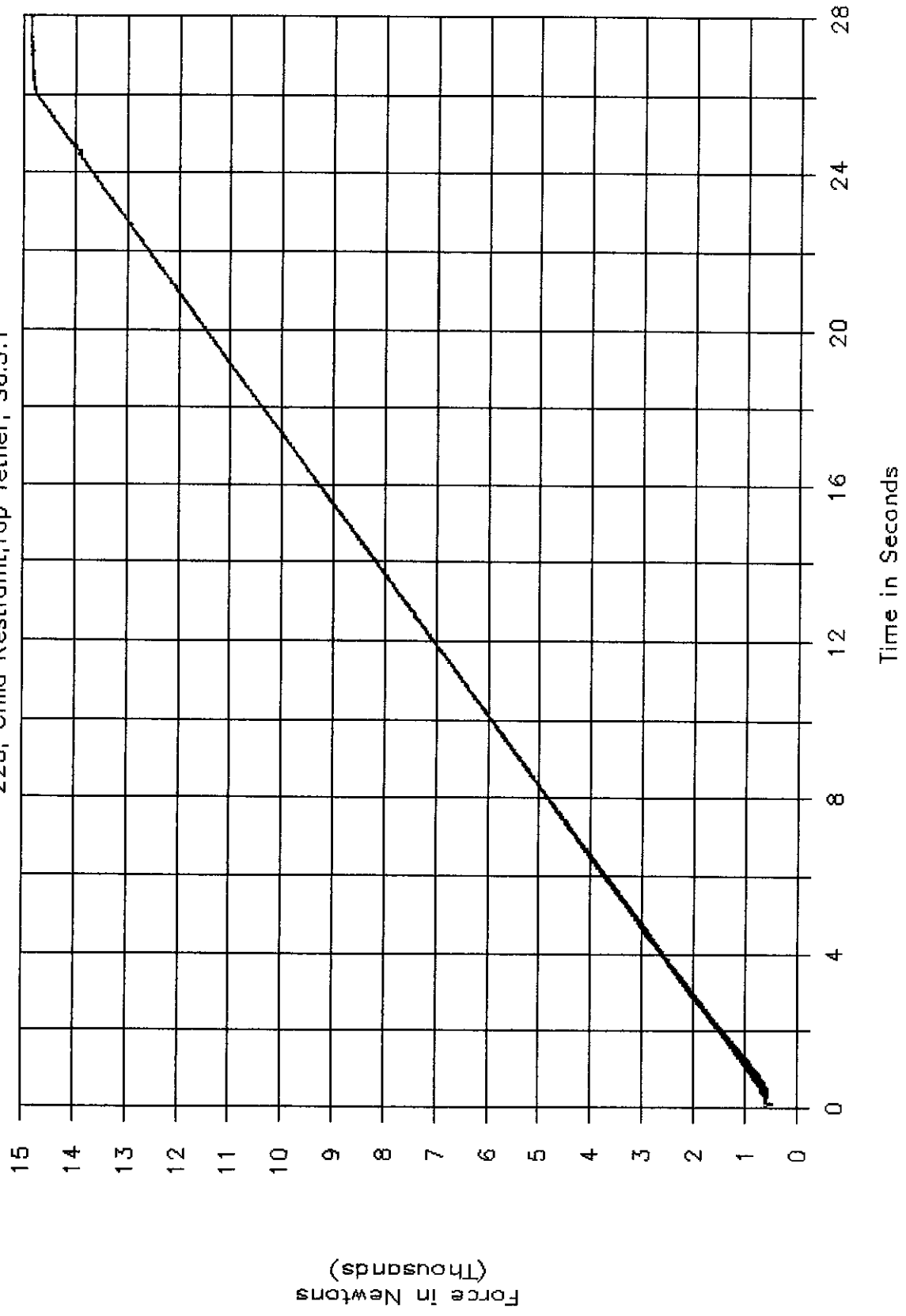
GTL 5260, NHTSA C40111

225, Child Restraint, Top Tether, S6.3.1



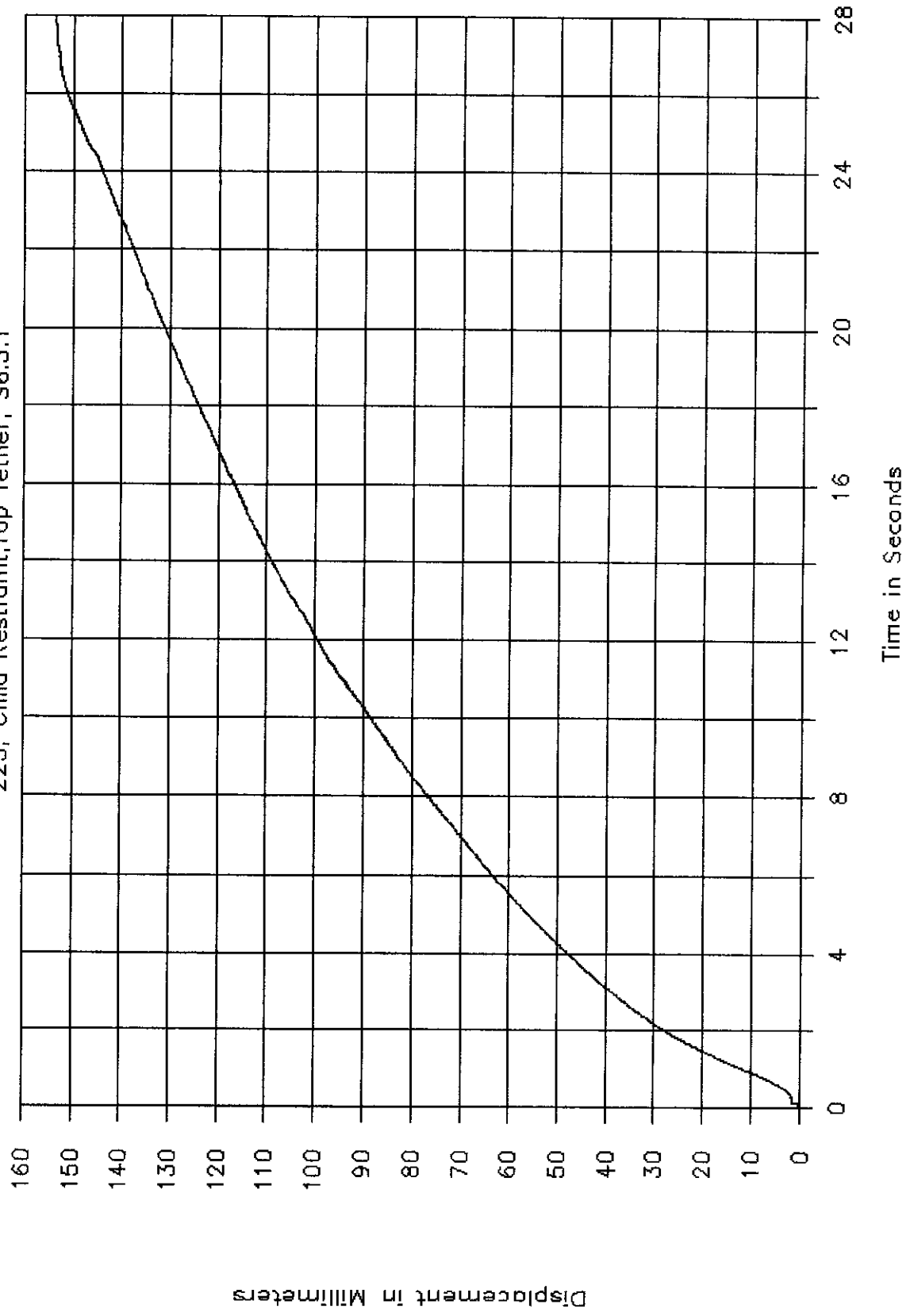
GTL 5261, NHTSA C40111

225, Child Restraint, Top Tether, S6.3.1



GTL 5261, NHTSA C40111

225, Child Restraint, Top Tether, S6.3.1



APPENDIX A

OWNER'S MANUAL CHILD RESTRAINT INFORMATION

Child Restraints

Older Children



Older children who have outgrown booster seats should wear the vehicle's safety belts.

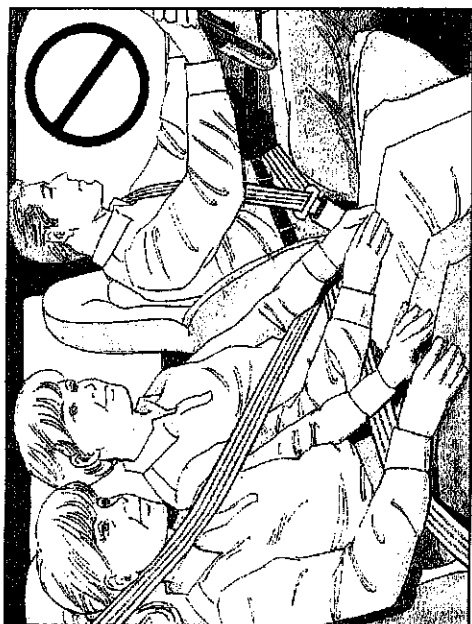
If you have the choice, a child should sit in a seating position that has a lap-shoulder belt to get the additional restraint a shoulder belt can provide.

Q: What is the proper way to wear safety belts?

A: If possible, an older child should wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide. The shoulder belt should not cross the face or neck. The lap belt should fit snugly below the hips, just touching the top of the thighs. It should never be worn over the abdomen, which could cause severe or even fatal internal injuries in a crash.

Accident statistics show that children are safer if they are restrained in the rear seat.

In a crash, children who are not buckled up can strike other people who are buckled up, or can be thrown out of the vehicle. Older children need to use safety belts properly.



Q: What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?

A: If the child is seated in a rear outside seat position, move the child toward the center of the vehicle. See *Rear Safety Belt Comfort Guides for Children and Small Adults* on page 1-29. If the child is sitting in the second row center seat position, move the child toward the safety belt buckle. In either case, be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide. If the child is so small that the shoulder belt is still very close to the child's face or neck, you might want to place the child in a seat that has a lap belt, if your vehicle has one.



CAUTION:

Never do this.

Here two children are wearing the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.



CAUTION: (Continued)

this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

Wherever the child sits, the lap portion of the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

Infants and Young Children

Everyone in a vehicle needs protection! This includes infants and all other children. Neither the distance traveled nor the age and size of the traveler changes the need for everyone to use safety restraints. In fact, the law in every state in the United States and in every Canadian province says children up to some age must be restrained while in a vehicle.

Every time infants and young children ride in vehicles, they should have the protection provided by the appropriate restraint. Young children should not use the vehicle's safety belts without an additional restraint, unless there is no other choice.

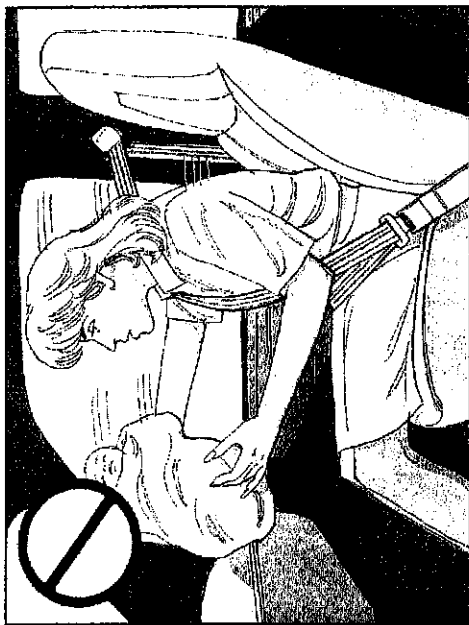
⚠ CAUTION:

Never do this.

Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in

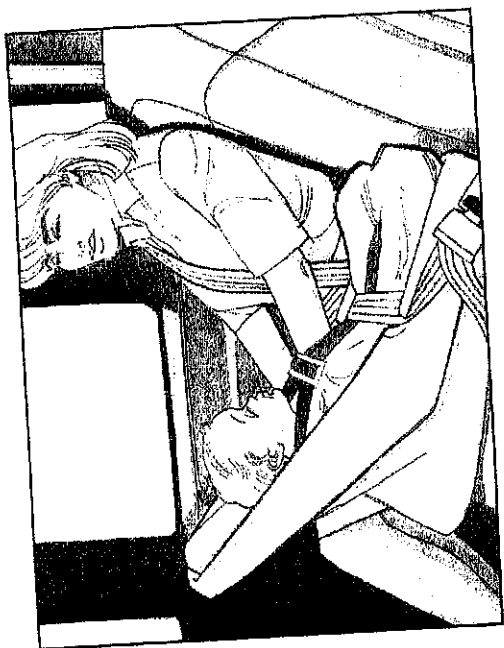
CAUTION: (Continued)

**Cargo Vans with a Passenger Air Bag
and an Air Bag Off Switch, Passenger
Vans and Cab and Chassis Models**



⚠ CAUTION:

People should never hold a baby in their arms while riding in a vehicle. A baby doesn't weigh much -- until a crash. During a crash a baby will become so heavy it is not possible to hold it. For example, in a crash at only 25 mph (40 km/h), a 12-lb. (5.5 kg) baby will suddenly become a 240-lb. (110 kg) force on a person's arms. A baby should be secured in an appropriate restraint.



⚠ CAUTION:

Children who are up against, or very close to, any air bag when it inflates can be seriously injured or killed. Air bags plus lap-shoulder belts offer outstanding protection for adults and older children, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide.

Q: What are the different types of add-on child restraints?

A: Add-on child restraints, which are purchased by the vehicle's owner, are available in four basic types. Selection of a particular restraint should take into consideration not only the child's weight, height, and age but also whether or not the restraint will be compatible with the motor vehicle in which it will be used.

For most basic types of child restraints, there are many different models available. When purchasing a child restraint, be sure it is designed to be used in a motor vehicle. If it is, the restraint will have a label saying that it meets federal motor vehicle safety standards.

The restraint manufacturer's instructions that come with the restraint state the weight and height limitations for a particular child restraint. In addition, there are many kinds of restraints available for children with special needs.

CAUTION:

Newborn infants need complete support, including support for the head and neck. This is necessary because a newborn infant's neck is weak and its head weighs so much compared with the rest of its body. In a crash, an infant in a rear-facing seat settles into the restraint, so the crash forces can be distributed across the strongest part of an infant's body, the back and shoulders. Infants always should be secured in appropriate infant restraints.

CAUTION:

The body structure of a young child is quite unlike that of an adult or older child, for whom the safety belts are designed. A young child's hip bones are still so small that the vehicle's regular safety belt may not remain low on the hip bones, as it should. Instead, it may settle up around the child's abdomen. In a crash, the belt would apply force on a body area that's unprotected by any bony structure. This alone could cause serious or fatal injuries. Young children always should be secured in appropriate child restraints.

**Cargo Vans with a Passenger Air Bag
and without an Air Bag Off Switch**

⚠ CAUTION:

Children who are up against, or very close to, an air bag when it inflates can be seriously injured or killed. Air bags plus lap-shoulder belts offer outstanding protection for adults and older children, but not for young children and infants. Neither the vehicle's safety belt system nor its air bag system is designed for them. Young children and infants need the protection that a child restraint system can provide.

CAUTION: (Continued)

is weak and its head weighs so much compared with the rest of its body. In a crash, an infant in a rear-facing seat settles into the restraint, so the crash forces can be distributed across the strongest part of an infant's body, the back and shoulders. Infants always should be restrained in appropriate infant restraints. However, infants, who should be restrained in a rear-facing child restraint, cannot ride safely in this vehicle.

⚠ CAUTION:

The body structure of a young child is quite unlike that of an adult or older child, for whom the safety belts are designed. A young child's hip bones are still so small that the vehicle's regular safety belt may not remain low on the hip bones, as it should. Instead, it may settle

CAUTION: (Continued)

⚠ CAUTION:

Newborn infants need complete support, including support for the head and neck. This is necessary because a newborn infant's neck

CAUTION: (Continued)

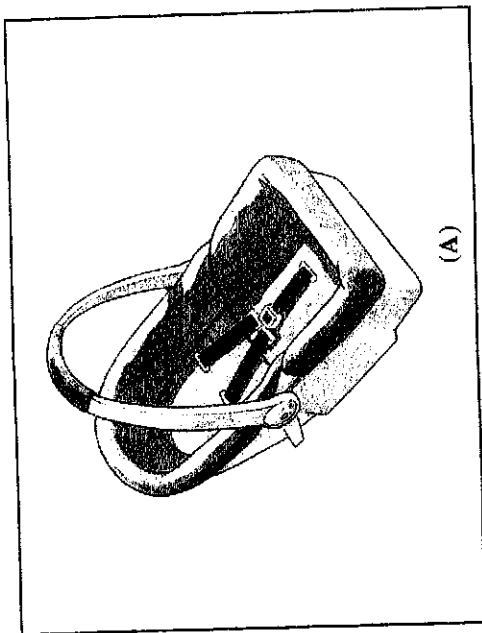
up around the child's abdomen. In a crash, the belt would apply force on a body area that's unprotected by any bony structure. This alone could cause serious or fatal injuries. Young children always should be secured in appropriate child restraints.



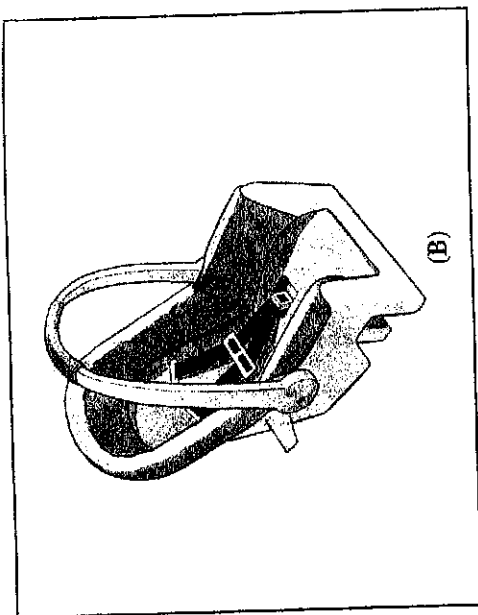
⚠ CAUTION:

People should never hold a baby in their arms while riding in a vehicle. A baby doesn't weigh much -- until a crash. During a crash a baby will become so heavy it is not possible to hold it. For example, in a crash at only 25 mph (40 km/h), a 12-lb. (5.5 kg) baby will suddenly become a 240-lb. (110 kg) force on a person's arms.

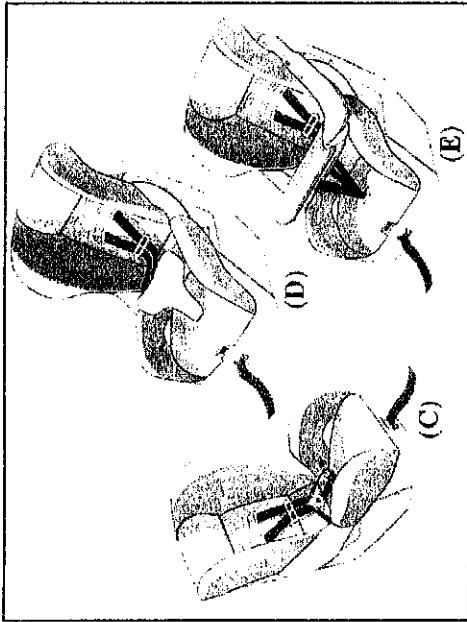
Child Restraint Systems



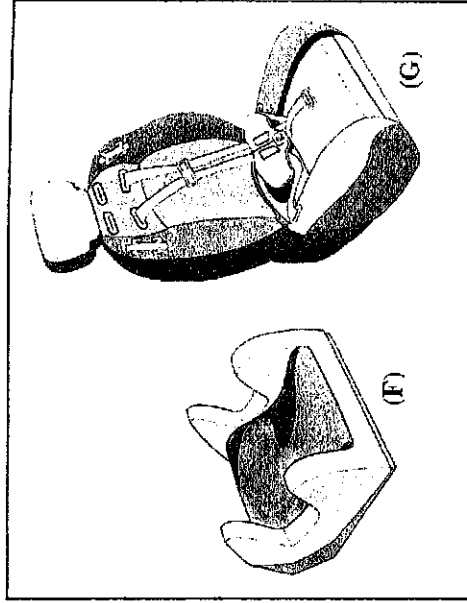
An infant car bed (A), a special bed made for use in a motor vehicle, is an infant restraint system designed to restrain or position a child on a continuous flat surface. Make sure that the infant's head rests toward the center of the vehicle.



A rear-facing infant seat (B) provides restraint with the seating surface against the back of the infant. The harness system holds the infant in place and, in a crash, acts to keep the infant positioned in the restraint.



A forward-facing child seat (C-E) provides restraint for the child's body with the harness and also sometimes with surfaces such as T-shaped or shelf-like shields.



A booster seat (F-G) is a child restraint designed to improve the fit of the vehicle's safety belt system. Some booster seats have a shoulder belt positioner, and some high-back booster seats have a five-point harness. A booster seat can also help a child to see out the window.

Q: How do child restraints work?

A: A child restraint system is any device designed for use in a motor vehicle to restrain, seat, or position children. A built-in child restraint system is a permanent part of the motor vehicle. An add-on child restraint system is a portable one, which is purchased by the vehicle's owner.

For many years, add-on child restraints have used the adult belt system in the vehicle. To help reduce the chance of injury, the child also has to be secured within the restraint. The vehicle's belt system secures the add-on child restraint in the vehicle, and the add-on child restraint's harness system holds the child in place within the restraint.

One system, the three-point harness, has straps that come down over each of the infant's shoulders and buckle together at the crotch. The five-point harness system has two shoulder straps, two hip straps and a crotch strap. A shield may take the place of hip straps.

A T-shaped shield has shoulder straps that are attached to a flat pad which rests low against the child's body. A shelf- or armrest-type shield has straps that are attached to a wide, shelf-like shield that swings up or to the side.

When choosing a child restraint, be sure the child restraint is designed to be used in a vehicle. If it is, it will have a label saying that it meets federal motor vehicle safety standards.

Then follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both. These restraints use the belt system or the LATCH system in your vehicle, but the child also has to be secured within the restraint to help reduce the chance of personal injury. When securing an add-on child restraint, refer to the instructions that come with the child restraint which may be on the restraint itself or in a booklet, or both, and to this manual. The child restraint instructions are important, so if they are not available, obtain a replacement copy from the manufacturer.

Where to Put the Restraint

Passenger Vans without an Air Bag Off Switch

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. We, therefore, recommend that child restraints be secured in a rear seat including an infant riding in a rear-facing infant seat, a child riding in a forward-facing child seat and an older child riding in a booster seat. If your vehicle has a front passenger air bag, never put a rear-facing child restraint in the front passenger seat. Here is why:

CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. If your vehicle has a right front passenger's air bag, always secure a rear-facing child restraint in a rear seat.

CAUTION: (Continued)

CAUTION: (Continued)

If you secure a forward-facing child restraint in the right front seat, always move the front passenger seat as far back as it will go. It is better to secure the child restraint in a rear seat.

Wherever you install it, be sure to secure the child restraint properly.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle – even when no child is in it.

Passenger Vans with an Air Bag Off Switch

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. We, therefore, recommend that child restraints be secured in a rear seat, including an infant riding in a rear-facing infant seat, a child riding in a forward-facing child seat and an older child riding in a booster seat. If you need to secure a rear-facing child restraint in the right front passenger's seat, turn off the passenger's air bag. See *Air Bag Off Switch* on page 1-72 and *Securing a Child Restraint in the Right Front Seat Position* on page 1-60 for more on this, including important safety information.

CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Be sure to turn off the air bag

CAUTION: (Continued)

CAUTION: (Continued)

before using a rear-facing child restraint in the right front seat position.

Even though the air bag off switch is designed to turn off the passenger's frontal air bag, no system is fail-safe, and no one can guarantee that an air bag will not deploy under some unusual circumstance, even though it is turned off. We recommend that rear-facing child restraints be transported in vehicles with a rear seat that will accommodate a rear-facing child restraint, whenever possible.

If you secure a forward-facing child restraint in the right front seat always move the seat as far back as it will go. It is better to secure the child restraint in a rear seat.

Wherever you install it, be sure to secure the child restraint properly.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle – even when no child is in it.

Cargo Vans and Cab and Chassis Models without an Air Bag Off Switch

The child restraint must be secured properly in the right front passenger seat. If your vehicle has a passenger air bag, *never* use a rear-facing child restraint in this vehicle. Here is why:

CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Do not use a rear-facing child restraint in this vehicle.

CAUTION: (Continued)

CAUTION: (Continued)

If you secure a forward-facing child restraint in the front passenger position, always move the front passenger seat as far back as it will go.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle – even when no child is in it.

Cargo Vans and Cab and Chassis Models with an Air Bag Off Switch

The child restraint must be secured properly in the right front passenger seat. If you need to secure a rear-facing child restraint in the right front passenger's seat, turn off the passenger's air bag. See *Air Bag Off Switch* on page 1-72 and *Securing a Child Restraint in the Right Front Seat Position* on page 1-60 for more on this, including important safety information.

CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. Be sure to turn off the air bag before using a rear-facing child restraint in the right front seat position.

CAUTION: (Continued)

CAUTION: (Continued)

Even though the air bag off switch is designed to turn off the passenger's frontal air bag, no system is fail-safe, and no one can guarantee that an air bag will not deploy under some unusual circumstance, even though it is turned off. We recommend that rear-facing child restraints be transported in vehicles with a rear seat that will accommodate a rear-facing child restraint, whenever possible.

If you secure a forward-facing child restraint in the right front seat always move the seat as far back as it will go. It is better to secure the child restraint in a rear seat.

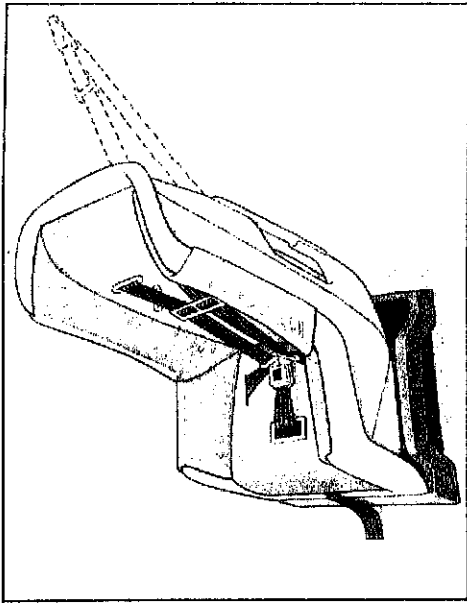
Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle – even when no child is in it.

Top Strap

Some child restraints have a top strap, or "top tether." It can help restrain the child restraint during a collision.

For it to work, a top strap must be properly anchored to the vehicle. Some top strap-equipped child restraints are designed for use with or without the top strap being anchored. Others require the top strap always to be anchored. Be sure to read and follow the instructions for your child restraint. If yours requires that the top strap be anchored, don't use the restraint unless it is anchored properly.

If the child restraint does not have a top strap, one can be obtained, in kit form, for many child restraints. Ask the child restraint manufacturer whether or not a kit is available.



In Canada, the law requires that forward-facing child restraints have a top strap, and that the strap be anchored. In the United States, some child restraints also have a top strap. If your child restraint has a top strap, it should be anchored.

Anchor the top strap to one of the following anchor points. Be sure to use an anchor point located on the same side of the vehicle as the seating position where the child restraint will be placed.

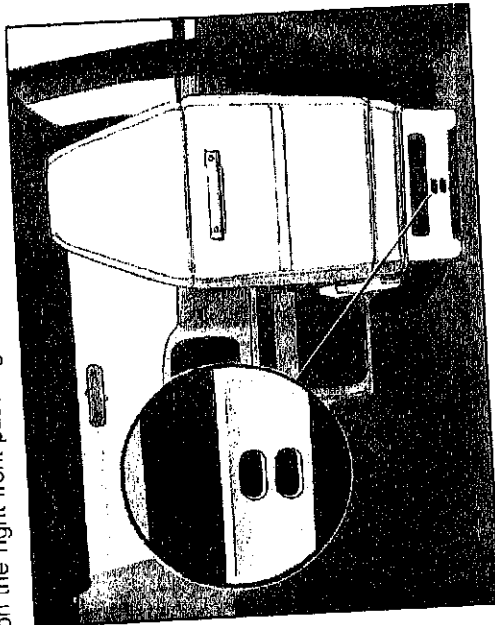
⚠ CAUTION:

Each top tether bracket is designed to anchor only one child restraint. Attaching more than one child restraint to a single bracket could cause the anchor to come loose or even break during a crash. A child or others could be injured if this happens. To help prevent injury to people and damage to your vehicle, attach only one child restraint per bracket.

Once you have the top strap anchored, you'll be ready to secure the child restraint itself. Tighten the top strap when and as the child restraint manufacturer's instructions say.

Top Strap Anchor Location

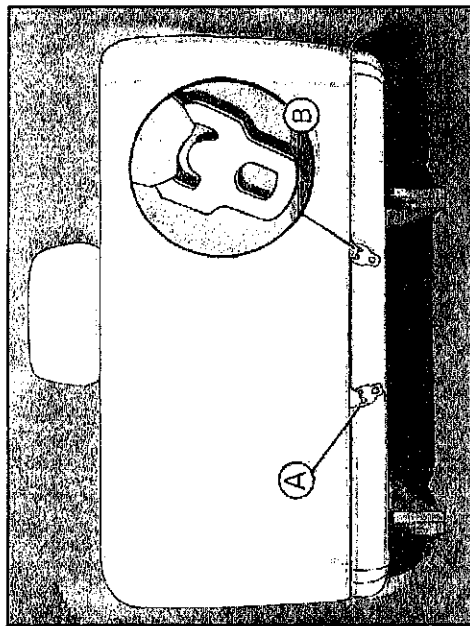
On vehicles with a front passenger seat, the anchor for a top strap is located at the rear of the seat cushion on the right front passenger's seat.



Cargo Van Models

If your vehicle is a passenger van with rear seats, an anchor bracket for a top strap is located at the rear of the seat cushion for each three-passenger rear bench seat. Don't use a child restraint with a top strap in the right front passenger's position, or in any four-passenger rear bench seat.

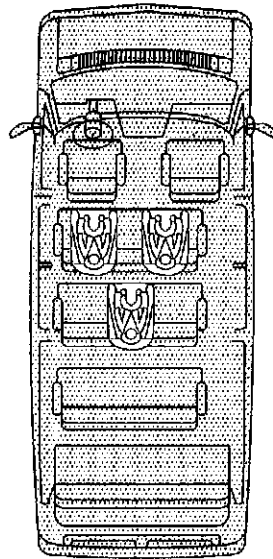
The top strap is designed for the second row driver side position and the third/fourth row center seating positions in a three-passenger rear bench seat.



Passenger Van 3-Passenger Rear Seats

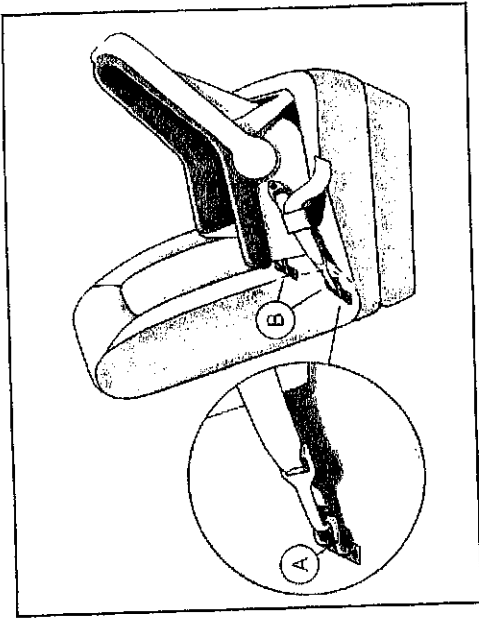
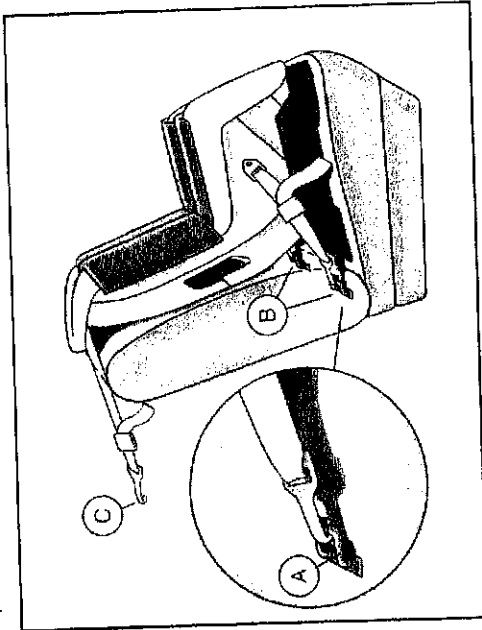
Anchor the top strap to this bracket. For the second row only, in the left outboard seating position, use anchor point (A). For the right outboard seating position, use anchor point (B). For a center seating position, use either anchor point (A) or (B).

Lower Anchorages and Top Tethers for Children (LATCH System)



If you have a passenger van, it may have the LATCH system. If it does, you'll find two sets of anchors (A) in the second row of seats in the driver and passenger side seating positions, where the seatback meets the seat cushion.

This system, designed to make installation of child restraints easier, does not use the vehicle's safety belts. Instead, it uses vehicle anchors (A, B) and child restraint attachments to secure the restraints. Some restraints also use another vehicle anchor to secure a top tether strap (C).



In order to use the LATCH system in your vehicle, you need a child restraint designed for that system. To assist you in locating the lower anchors for this child restraint system, each seating position with the LATCH system has a label on the seatback at each lower anchor position.



The LATCH system labels are located on the outboard and inboard positions of the seats.

Securing a Child Restraint Designed for the LATCH System (Rear)

1. Find the LATCH anchorages for the seating position you want to use, where the bottom of the seatback meets the back of the seat cushion.
2. Put the child restraint on the seat.
3. Attach and tighten the LATCH attachments on the child restraint to the LATCH anchorages in the vehicle. The child restraint instructions will show you how.
4. If the child restraint is forward-facing, attach and tighten the top tether to the top tether anchorage. The child restraint instructions will show you how. Also see *Top Strap on page 1-47*.
5. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, simply unhook the top tether from the top tether anchorage and then disconnect the LATCH attachments from the LATCH anchorages.

CAUTION:

If a LATCH-type child restraint is not attached to its anchorage points, the restraint will not be able to protect the child correctly. In a crash, the child could be seriously injured or killed. Make sure that a LATCH-type child restraint is properly installed using the anchorage points, or use the vehicle's safety belts to secure the restraint, following the instructions that came with that restraint, and also the instructions in this manual.

Securing a Child Restraint Designed for the LATCH System (Front)

Unless your vehicle has an air bag off switch and you have used it to turn the passenger's air bag off, never put a rear-facing child restraint in the right front passenger's seat. Here's why:



CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. If your vehicle is a passenger van, always secure a rear-facing child restraint in a rear seat. If your vehicle is a cargo van with a right front passenger air bag and an air bag off switch, be sure to turn off the air bag before using a rear-facing child restraint in the right front seat position.

CAUTION: (Continued)

CAUTION: (Continued)

If your vehicle is a cargo van with a right front passenger air bag but does not have an air bag off switch, do not use a rear-facing child restraint in this vehicle.

Even though the air bag off switch is designed to turn off the passenger's frontal air bag, no system is fail-safe and no one can guarantee that an air bag will not deploy under some unusual circumstance, even though it is turned off. GM recommends that rear-facing child restraints be transported in vehicles with a rear seat that will accommodate a rear-facing child restraint whenever possible.

If you secure a forward-facing child restraint in the right front passenger position, always move the passenger seat as far back as it will go.

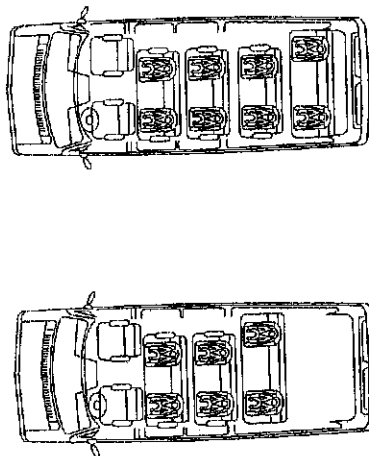
A rear seat is a safer place to secure a forward-facing child restraint. See *Where to Put the Restraint* on page 1-43.

CAUTION:

If the air bag readiness light ever comes on when you have turned off the air bag, it means that something may be wrong with the air bag system. The right front passenger's air bag could inflate even though the switch is off. If this ever happens, don't let anyone whom the national government has identified as a member of a passenger air bag risk group sit in the right front passenger's position (for example, don't secure a rear-facing child restraint in your vehicle) until you have your vehicle serviced. See "Air Bag Off Switch" in the Index.

1. If your vehicle has a passenger air bag and an air bag off switch, and you are using a rear-facing child restraint in this seat, make sure the air bag is turned off. See *Air Bag Off Switch* on page 1-72. If your child restraint is forward-facing, always move the seat as far back as it will go before securing it in this seat. See *Power Seat* on page 1-4 or *Manual Seats* on page 1-3.
2. Find the LATCH anchorages for the seating position you want to use, where the bottom of the seatback meets the back of the seat cushion.
3. Put the child restraint on the seat.
4. Attach and tighten the LATCH attachments on the child restraint to the LATCH anchorages in the vehicle. The child restraint instructions will show you how.
5. If the child restraint is forward-facing, attach and tighten the top tether to the top tether anchorage. The child restraint instructions will show you how. Also see *Top Strap* on page 1-47.
6. Push and pull the child restraint in different directions to be sure it is secure.

Securing a Child Restraint in a Rear Outside Seat Position



If your child restraint is equipped with the LATCH system, see *Lower Anchors and Top Tethers for Children (LATCH System)* on page 1-49. See *Top Strap* on page 1-47 if the child restraint has one.

To remove the child restraint, simply unhook the top tether from the top tether anchorage and then disconnect the LATCH attachments from the LATCH anchorages.

If you were using a rear-facing child restraint in a vehicle with an air bag off switch, turn on the right front passenger's air bag when you remove the rear-facing child restraint from the vehicle unless the person who will be sitting there is a member of a passenger air bag risk group. See *Air Bag Off Switch* on page 1-72.

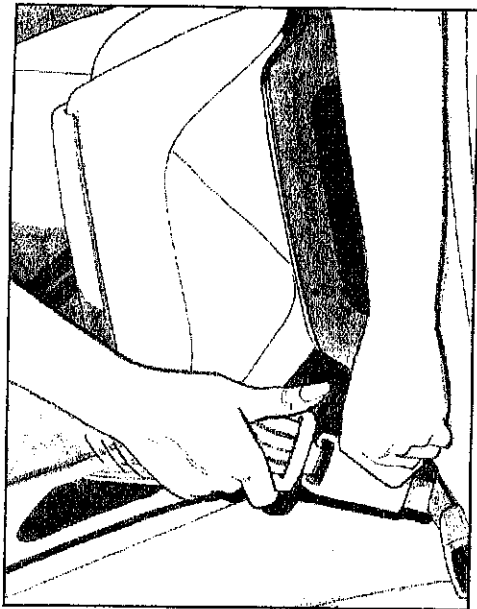
CAUTION:

If the right front passenger's air bag is turned off for a person who isn't in a risk group identified by the national government, that person won't have the extra protection of an air bag. In a crash, the air bag wouldn't be able to inflate and help protect the person sitting there. Don't turn off the passenger's air bag unless the person sitting there is in a risk group. See "Air Bag Off Switch" in the Index for more on this, including important safety information.

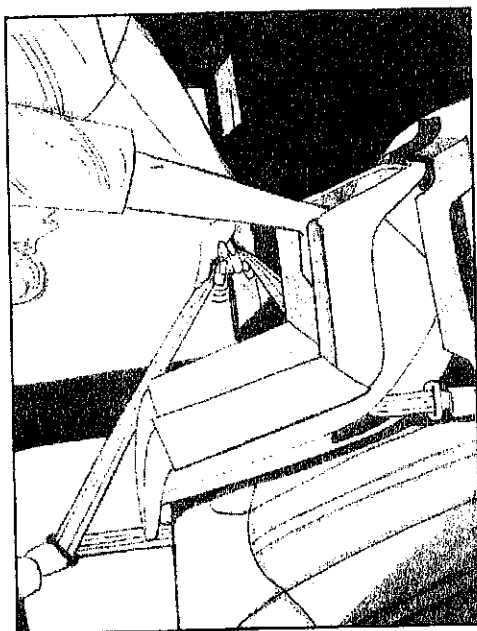
For vehicles with a third, fourth or fifth row, there are no top strap anchors in the rear outside seat positions of the third, fourth or fifth row. Do not secure a child seat in these positions if a national or local law requires that the top strap be anchored, or if the instructions that come with the child restraint say that the top strap must be anchored.

If your child restraint does not have the LATCH system, you will be using the lap-shoulder belt to secure the child restraint in this position. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

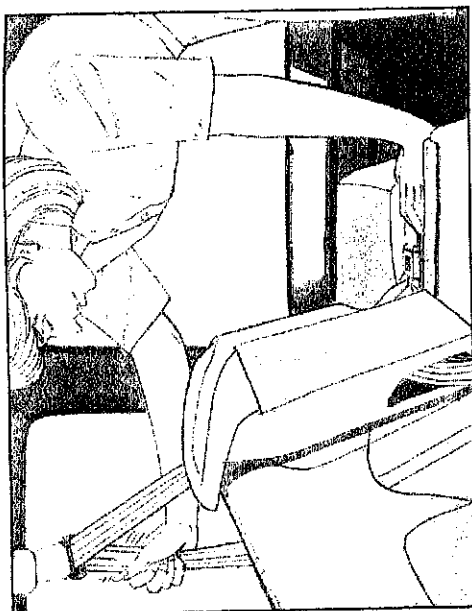
1. Put the restraint on the seat.
2. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



3. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

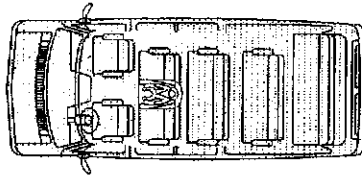
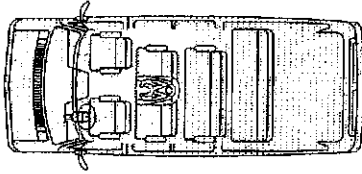


4. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.



5. To tighten the belt, pull the shoulder portion of the belt to tighten the lap portion of the belt and feed the shoulder belt back into the retractor. If you are using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
 6. Push and pull the child restraint in different directions to be sure it is secure.
- To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

Securing a Child Restraint in a Center Seat Position (2nd Row)

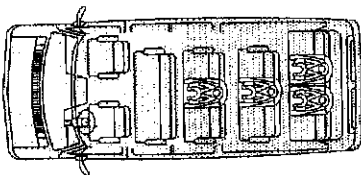
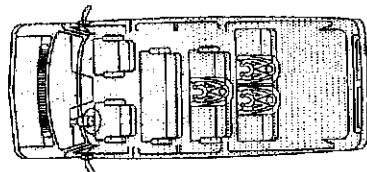


If your child restraint is equipped with the LATCH system, see *Lower Anchorages and Top Tethers for Children (LATCH System)* on page 1-49. See *Top Strap* on page 1-47 if the child restraint has one.

There is no top strap anchor in the center seat position of the second row. Do not secure a child seat in this position if a national or local law requires that the top strap be anchored, or if the instructions that come with the child restraint say that the top strap must be anchored.

If your child restraint does not have the LATCH system, you'll be using a lap-shoulder belt which works the same way as the safety belts in the rear outside seat positions. To learn how to secure a child restraint with a lap-shoulder belt, refer to the instructions in *Securing a Child Restraint in a Rear Outside Seat Position* on page 1-54.

Securing a Child Restraint in a Center Seat Position (3rd, 4th and 5th Row)

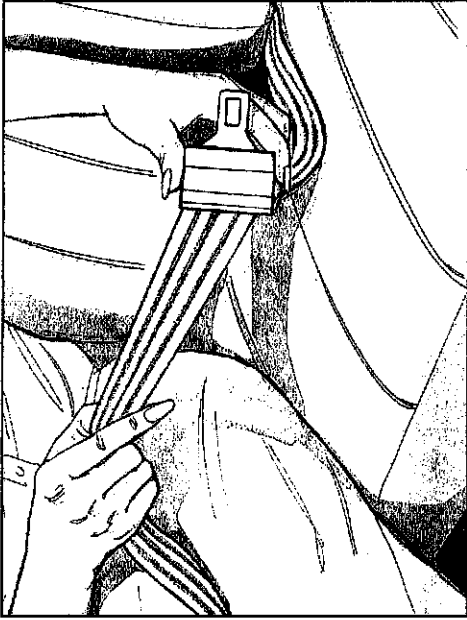


If your child restraint is equipped with the LATCH system, see *Lower Anchorages and Top Tethers for Children (LATCH System)* on page 1-49. See *Top Strap* on page 1-47 if the child restraint has one.

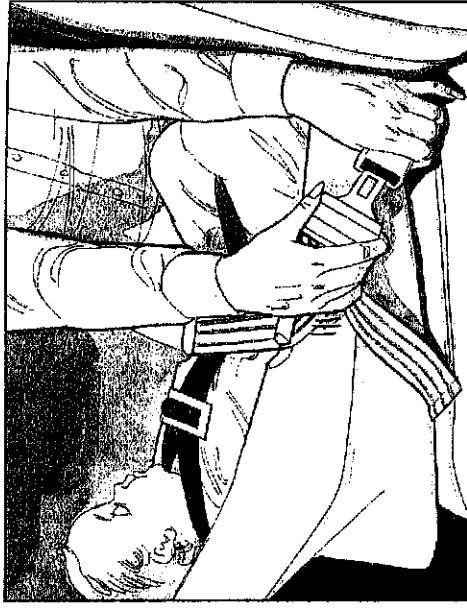
For vehicles with a fourth or fifth row four-passenger bench seat, there are no top strap anchors in the center seating positions of a fourth or fifth row four-passenger bench seat. Do not secure a child seat in these positions if a national or local law requires that the top strap must be anchored.

If your child restraint does not have the LATCH system, you will be using the lap belt to secure the child restraint in this position.

Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.



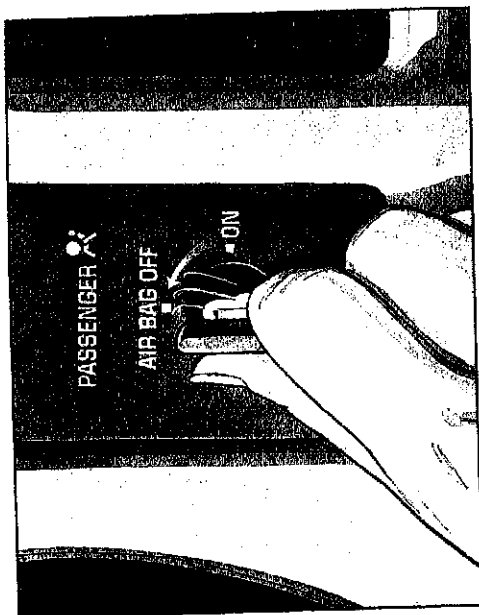
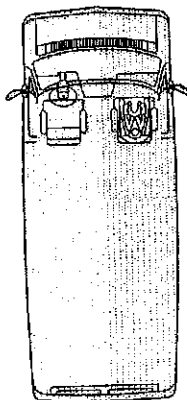
1. Make the belt as long as possible by tilting the latch plate and pulling it along the belt.
2. Put the restraint on the seat.
3. Run the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



4. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.
5. To tighten the belt, pull its free end while you push down on the child restraint. If you are using a forward-facing child restraint, you may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
6. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt. It will be ready to work for an adult or larger child passenger.

Securing a Child Restraint in the Right Front Seat Position



If your child restraint has the LATCH system, see *Lower Anchors and Top Tethers for Children (LATCH System)* on page 1-49. See *Top Strap* on page 1-47 if the child restraint has one.

Unless your vehicle has an air bag off switch and you have used it to turn the passenger's air bag off, never put a rear-facing child restraint in the right front passenger's seat. Here's why:



CAUTION:

A child in a rear-facing child restraint can be seriously injured or killed if the right front passenger's air bag inflates. This is because the back of the rear-facing child restraint would be very close to the inflating air bag. If your vehicle is a passenger van, always secure a rear-facing child restraint in a rear seat. If your vehicle is a cargo van with a right front passenger air bag and an air bag off switch, be sure to turn off the air bag before using a rear-facing child restraint in the right front seat position.

CAUTION: (Continued)

CAUTION: (Continued)

If your vehicle is a cargo van with a right front passenger air bag but does not have an air bag off switch, do not use a rear-facing child restraint in this vehicle.

Even though the air bag off switch is designed to turn off the passenger's frontal air bag, no system is fail-safe and no one can guarantee that an air bag will not deploy under some unusual circumstance, even though it is turned off. GM recommends that rear-facing child restraints be transported in vehicles with a rear seat that will accommodate a rear-facing child restraint whenever possible.

If you secure a forward-facing child restraint in the right front passenger position, always move the passenger seat as far back as it will go.

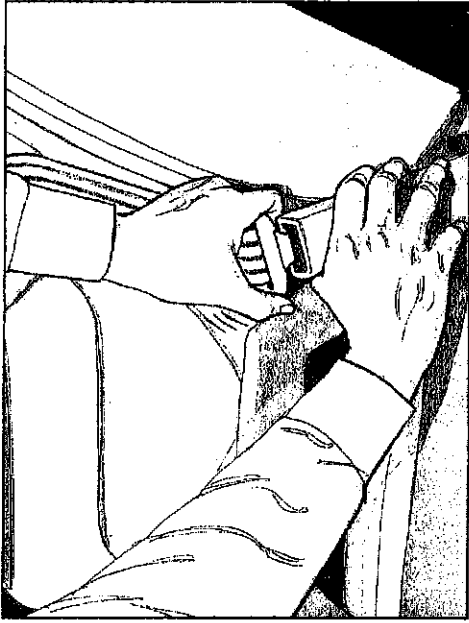
A rear seat is a safer place to secure a forward-facing child restraint. See *Where to Put the Restraint* on page 1-43.

CAUTION:

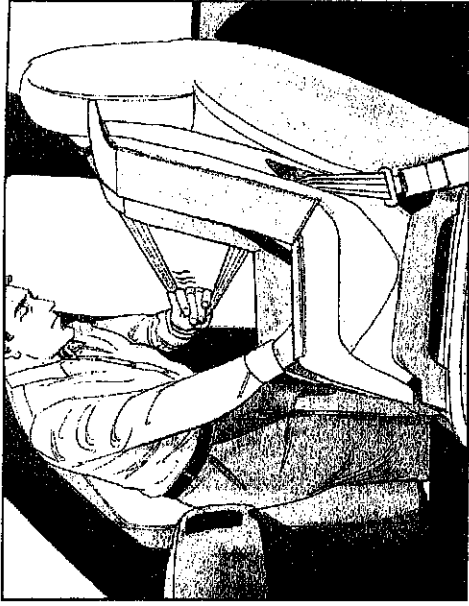
If the air bag readiness light ever comes on when you have turned off the air bag, it means that something may be wrong with the air bag system. The right front passenger's air bag could inflate even though the switch is off. If this ever happens, don't let anyone whom the national government has identified as a member of a passenger air bag risk group sit in the right front passenger's position (for example, don't secure a rear-facing child restraint in your vehicle) until you have your vehicle serviced. See "Air Bag Off Switch" in the Index.

If your child restraint does not have the LATCH system, you'll be using the lap-shoulder belt to secure the child restraint in this position. Be sure to follow the instructions that came with the child restraint. Secure the child in the child restraint when and as the instructions say.

1. If your vehicle has a passenger air bag and an air bag off switch, and you are using a rear-facing child restraint in this seat, make sure the air bag is turned off. See *Air Bag Off Switch* on page 1-72. If your child restraint is forward-facing, always move the seat as far back as it will go before securing it in this seat. See *Power Seat* on page 1-4 or *Manual Seats* on page 1-3.
2. Put the restraint on the seat.
3. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.



4. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.



5. Pull the rest of the lap belt all the way out of the retractor to set the lock.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

If you were using a rear-facing child restraint in a vehicle with an air bag off switch, turn on the right front passenger's air bag when you remove the rear-facing child restraint from the vehicle unless the person who will be sitting there is a member of a passenger air bag risk group. See *Air Bag Off Switch* on page 1-72.

CAUTION:

If the right front passenger's air bag is turned off for a person who isn't in a risk group identified by the national government, that person won't have the extra protection of an air bag. In a crash, the air bag wouldn't be able to inflate and help protect the person sitting there. Don't turn off the passenger's air bag unless the person sitting there is in a risk group. See "Air Bag Off Switch" in the Index for more on this, including important safety information.



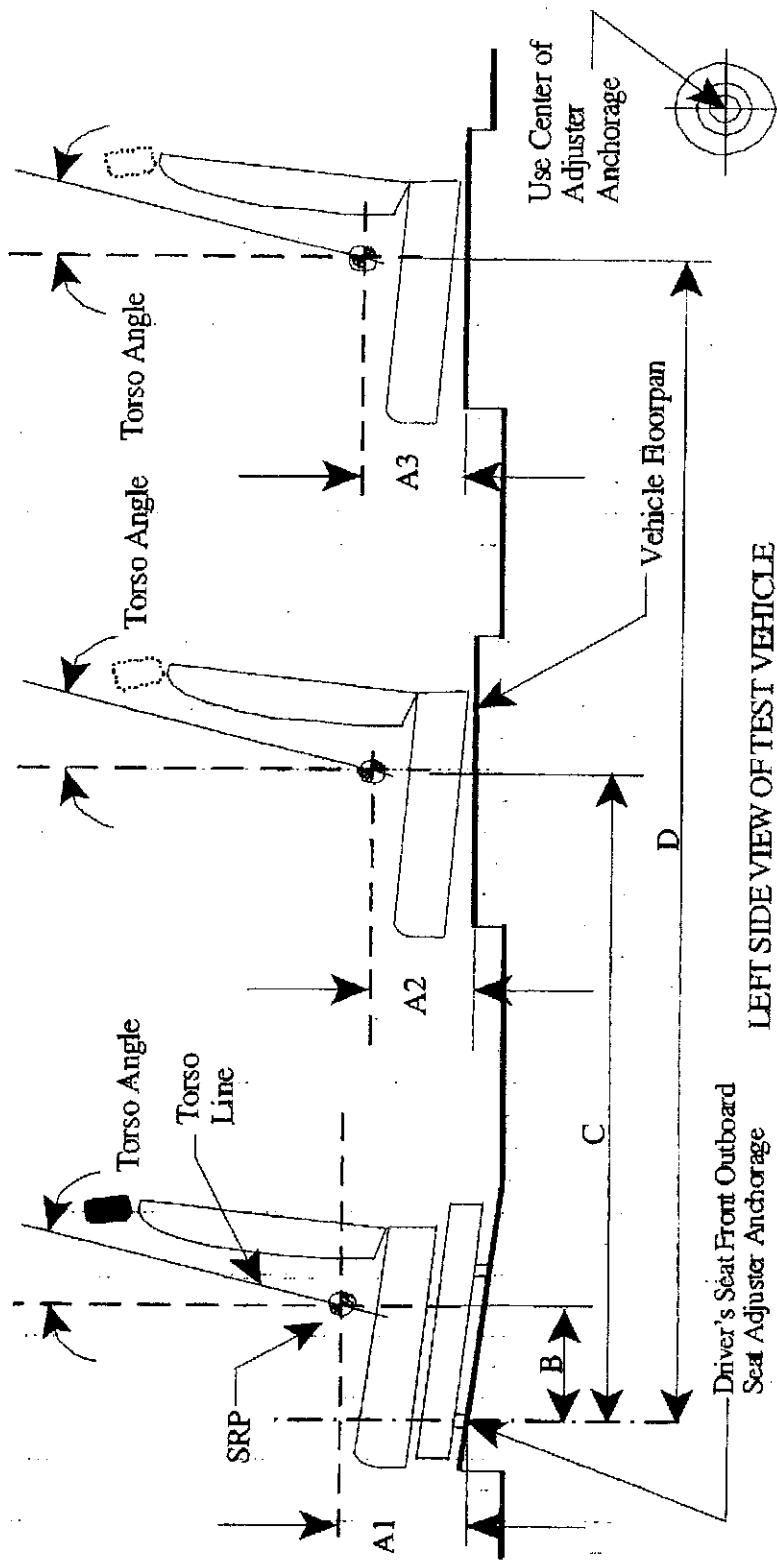
6. To tighten the belt, pull the shoulder portion of the belt to tighten the lap portion of the belt and feed the shoulder belt back into the retractor. You may find it helpful to use your knee to push down on the child restraint as you tighten the belt.
7. Push and pull the child restraint in different directions to be sure it is secure.

APPENDIX B

MANUFACTURER'S DATA

SEAT REFERENCE POINT (SRP) AND TORSO ANGLE DATA
FOR FMVSS 225
(All dimensions in mm¹)

Model Year: 2004; Make: Chevrolet; Model: Express; Body Style: 15 Passenger Van
Seat Style: Front row: Bucket; Second row: Bench; Third row: Bench; Fourth Row: Bench



LEFT SIDE VIEW OF TEST VEHICLE

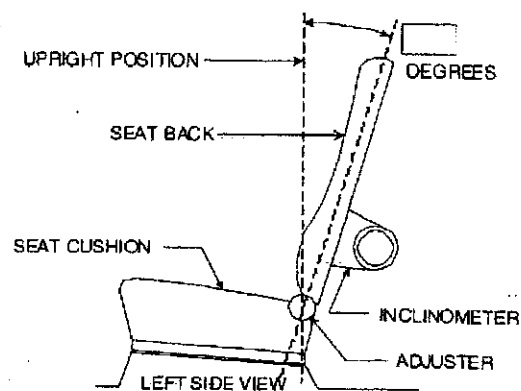
Table 1. Seating Positions¹ and Torso Angles

	Left (Driver Side)	Center (if any)	Right
A1 ²	(Driver) 389	NA - No center DSP	(Front Passenger) 389
A2 ²	394.5	394.5	394.5
A3 ²	394.5	394.5	394.5
A4 ²	394.5	394.5	394.5
B	229	NA - No center DSP	229
C	1117	1117	1117
D	1930	1930	1930
E (4 th Row)	2743	2743	2743
Torso Angle (degree)	Front Row	20	20
	Second Row	20	20
	Third Row	20	20
	Fourth Row	20	20

Note 1. All dimensions are in mm. If not, provide the unit used.

Note: 2. All "A" measurements are from the top center of seat adjuster mounting bolt.

NOMINAL DESIGN RIDING POSITION –
For adjustable driver, passenger, 2nd row and
3rd row seat backs, describe how to position
the inclinometer to measure the seat back
angle. Include description of the location of
the adjustment latch detent if applicable.
Indicate if applicable, how the detents are
numbered (Is the first detent "0" or "1"?).
Indicate if the seat back angle is measured
with the dummy in the seat.



Seat back angle for driver's seat =
20 degrees

Measurement Instructions:

_____ Empty seat. Inclinometer on back frame verticle tube. _____

Seat back angle for passenger's seat = _20_ degrees

Measurement Instructions:

_____ Sec
above _____

Seat back angle for 2nd row seat = _20_ degrees

Measurement Instructions:

_____ Non
adjustable _____

Seat back angle for 3rd row seat = _20_ degrees

Measurement Instructions:

_____ Non
adjustable _____

Seat back angle for 4th row seat = _20_ degrees

Measurement Instructions:

_____ Non
adjustable _____

SEATING REFERENCE POINT

FOR FMVSS 225

(All dimensions in mm)

(Note: The Child Restraint Anchorage Location determines the 225 SRP locations)

Model Year: 2004; Make: Chevrolet; Model: Express; Body Style: 15 Passenger Van
 Seat Style: Front row: Bucket; Second row: Bench; Third row: Bench; Fourth Row: Bench

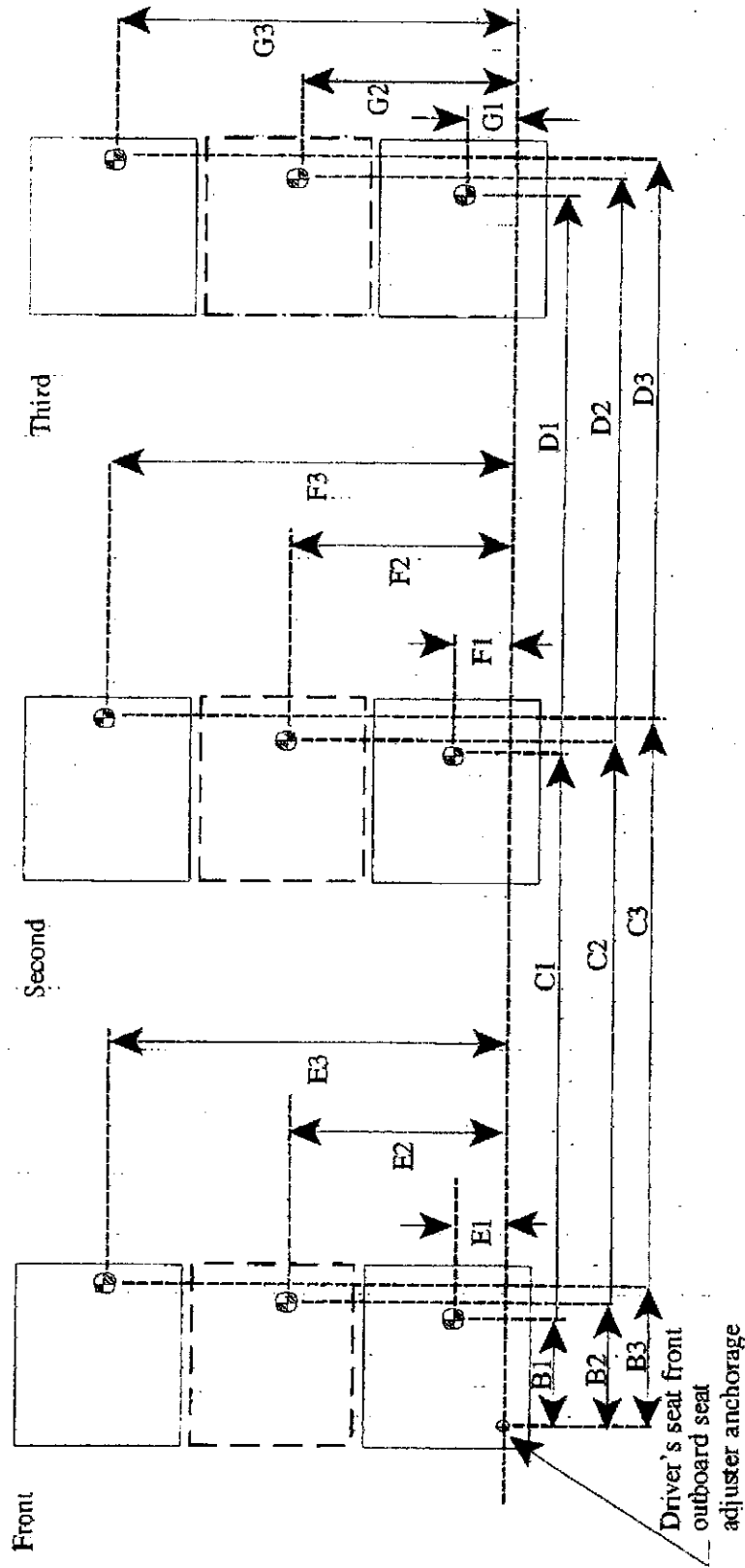


Table 2. Seating Reference Point and Tether Anchorage Locations

Seating Reference Point (SRP)		Distance from Driver's front outboard seat adjuster anchorage ¹
Front Row	B1	229mm
	E1	163
	B2	NA – No Center DSP
	E2	NA – No Center DSP
	B3	229
	E3	1229
Second Row	C1	1117
	F1	161
	C2	1117
	F2	547.5
	C3	1117
	F3	934.5
Third Row	D1	1930
	G1	161
	D2	1930
	G2	547.5
	D3	1930
	G3	934.5
Fourth Row	Length 1	4PASS 3PASS No tethers 2743
	Width 1	No tethers 161
	Length 2	No tethers 2743
	Width 2	No tethers 547.5
	Length 3	No tethers 2743
	Width 3	No tethers 934.5

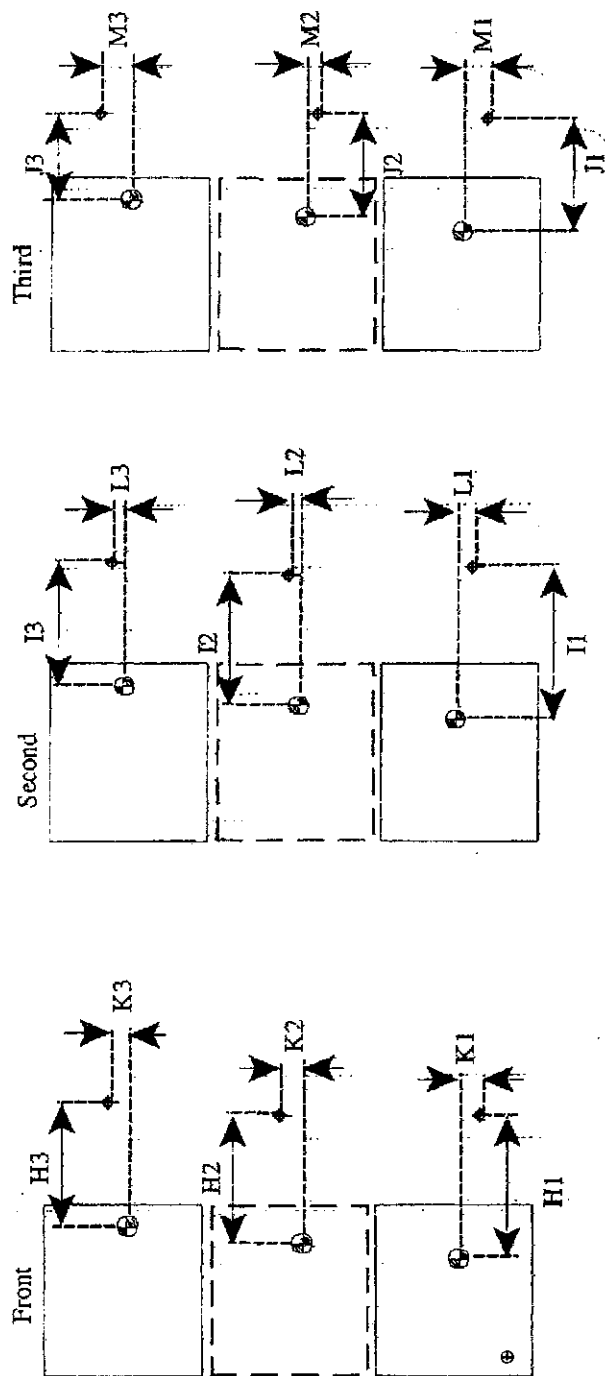
Note: 1. Use the center of anchorage.

TETHER ANCHORAGE LOCATIONS

FOR FMVSS 225

(All dimensions in mm)

Model Year: 2004; Make: Chevrolet; Model: Express; Body Style: 15 Passenger Van
 Seat Style: Front row: Bucket; Second row: Bench; Third row: Bench; Fourth Row: Bench



⊙: SRP

◆: Tether anchorage

Note: 1. The location shall be measured at the center of anchorage.

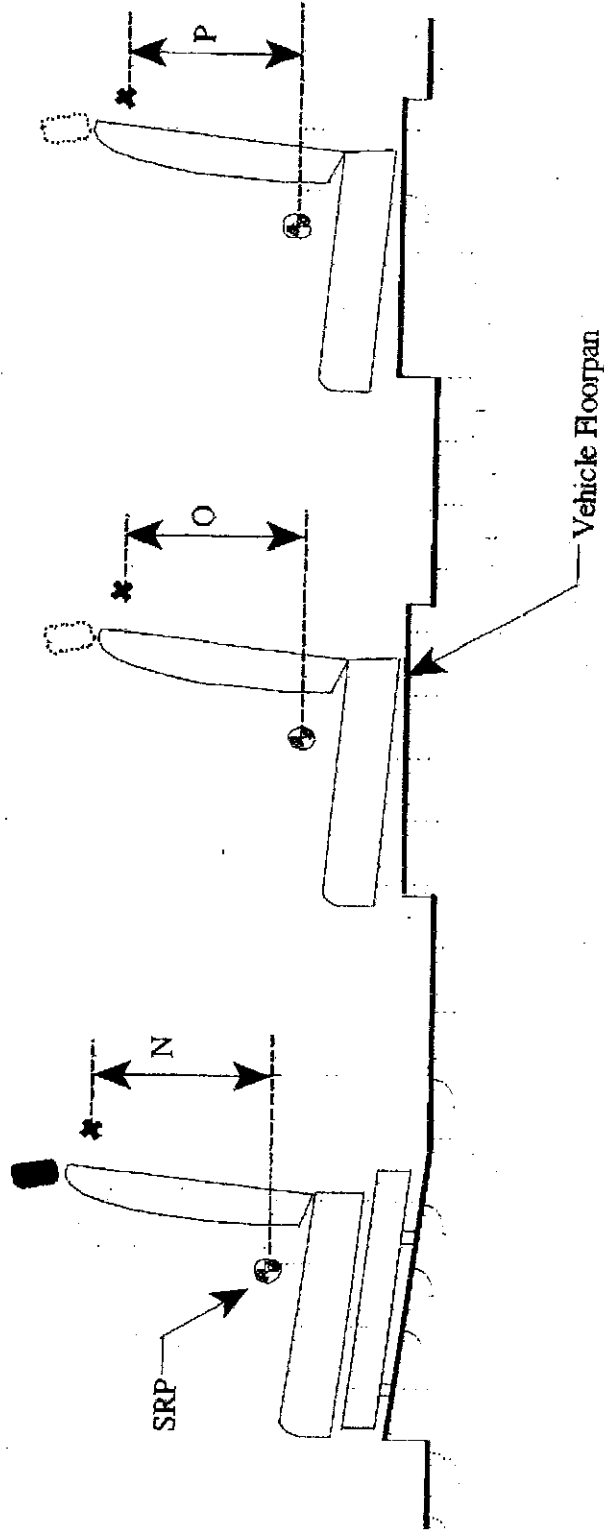
Table 3. Seating Reference Point and Tether Anchorage Locations

Seating Reference Point (SRP)	Distance from SRP	
Front Row	H1	NA – No tether at this DSP
	K1	NA – No tether at this DSP
	H2	NA – No tether at this DSP
	K2	NA – No tether at this DSP
	H3	44.4mm
	K3	0
Second Row	I1	117.25
	L1	-212
	I2	NA – No tether at this DSP
	L2	NA – No tether at this DSP
	I3	117.25
	L3	-212
Third Row	J1	NA – No tether at this DSP
	M1	NA – No tether at this DSP
	J2	NA – No tether at this DSP
	M2	NA – No tether at this DSP
	J3	117.05
	M3	-211.75
Fourth Row		(Same as Third Row)

Note: 1. Use the center of anchorage.

TETHER ANCHORAGE LOCATIONS - VERTICAL
FOR FMVSS 225
(All dimensions in mm)

Model Year: 2004; Make: Chevrolet; Model: Express; Body Style: 15 Passenger Van
Seat Style: Bucket; Second row: Bench; Third row: Bench; Fourth Row: Bench



LEFT SIDE VIEW OF TEST VEHICLE

Table 4. Vertical Dimension For The Tether Anchorage

Seating Row	Vertical Distance from Seating Reference Point
Front Row	N1 (Driver) N/A
	N2 (Center) N/A
	N3 (Right) -312.58mm
Second Row	O1 (Left) -158.65
	O2 (Center) N/A
	O3 (Right) -158.65
Third Row	P1 (Left) N/A
	P2 (Center) N/A
	P3 (Right) -158.65
Fourth Row	Q1 (Left) N/A
	Q2 (Center) N/A
	Q3 (Right) -158.65

Note: 1. All dimensions are in mm. If not, provide the unit anchorage.

Test Procedures Used for Compliance Tests

Lower Anchorages

For each seating location in each row record applicable FMVSS Section		FMVSS 225 Section(s)			
Block 1		Lower anchorage location certification method used (Enter applicable section used in block 1 of each position by circling A or B) <input checked="" type="checkbox"/> A) 9.2.1 or B) 15.1.2.2			
Block 2		Lower anchorage dimension (Enter applicable section used in block 2 by circling A or B) <input checked="" type="checkbox"/> A) 9.1.1 or B) 15.1.2.2 (also provide roll and yaw angles) pitch _____° roll _____° (Ref. Bottom of CRF) yaw _____°			
Block 3		Lower anchorage marking (Enter applicable section used in block 3 by circling A or B) <input checked="" type="checkbox"/> A) 9.5 or B) 15.4			
Block 4		Strength requirement (Enter applicable section used in block 4 by circling A or B) <input checked="" type="checkbox"/> A) Section 9 or B) Section 15			
Front	Driver	N/A			
	Center (if any)	N/A – No front center seat available.			
	Right (if any)	N/A – Front Passenger seat only has the top tether.			
Second	Left <input checked="" type="checkbox"/>	Block 1 <input checked="" type="checkbox"/> A B	Block 2 <input checked="" type="checkbox"/> A B Pitch 13°, Roll 0°, Yaw 0°	Block 3 <input checked="" type="checkbox"/> A B	Block 4 <input checked="" type="checkbox"/> A <input checked="" type="checkbox"/> B
	Center	N/A – No anchorage at center seat position.			
	Right (if any) <input checked="" type="checkbox"/>	Block 1 <input checked="" type="checkbox"/> A B	Block 2 <input checked="" type="checkbox"/> A B Pitch 13°, Roll 0°, Yaw 0°	Block 3 <input checked="" type="checkbox"/> A B	Block 4 <input checked="" type="checkbox"/> A <input checked="" type="checkbox"/> B
Third	Left	N/A – No anchorage at the left seat position.			
	Center	N/A – No anchorage at center seat position.			
	Right	N/A – No anchorage at the right seat position.			
Fourth	Left	N/A – No anchorage at the left seat position.			
	Center	N/A – No anchorage at center seat position.			
	Right	N/A – No anchorage at the right seat position.			

Test Procedures Used for Compliance Tests

Tether Anchorages

For each seating location in each row record applicable FMVSS Section		FMVSS Section(s) - Req.		
Block 1		Tether anchorage location certification method used (Enter applicable section used in block 1 by circling A, B, C, D, E or F) A) 6.2.1 B) 6.2.1.1 C) 6.2.1.2 <u>D) 6.2.2</u> E) 6.2.2.1 F) 6.2.2.2		
Block 2		Number of tether anchorages based upon the applicable section (Enter applicable section used in block 2 by circling A or B) <u>A) 4.4</u> B) 4.5		
Block 3		Tether anchorage strength requirement (Enter applicable section used in block 3 by circling A, B, or C) <u>A) 6.3.1</u> B) 6.3.2 C) 6.3.4		
Front	Driver	N/A		
	Center (if any)	N/A - No front center seat available.		
	Right (if any)	Block 1 A B C <u>D</u> E F	Block 2 <u>A</u> B	Block 3 <u>A</u> B C
Second	Left	Block 1 A B C <u>D</u> E F	Block 2 <u>A</u> B	Block 3 <u>A</u> B C
	Center	N/A - No top tether at center seat position.		
	Right	Block 1 A B C <u>D</u> E F	Block 2 <u>A</u> B	Block 3 <u>A</u> B C
Third	Left	N/A - No top tether at the left seat position.		
	Center	N/A - No top tether at center seat position.		
	Right ✓	Block 1 A B C <u>D</u> E F	Block 2 <u>A</u> B	Block 3 <u>A</u> ✓ B C
Fourth	Left	N/A - No top tether at the left seat position.		
	Center	N/A - No top tether at center seat position.		
	Right	Block 1 A B C <u>D</u> E F	Block 2 <u>A</u> B	Block 3 <u>A</u> B C

APPENDIX C
LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 225 TEST DATE: 09/28/04

LABORATORY: General Testing Laboratories, Inc.

CONTRACT NO.: DTNH22-02-D-01043 ; DELV. ORDER NO.: _____

LABORATORY PROJECT ENGINEER'S NAME: Grant Farrand

TEST VEHICLE MAKE/MODEL/BODY STYLE: 2004 Chevrolet Express MPV

VEHICLE NHTSA NO.: C40111 : VIN: 1GNFG15XX41117979

VEHICLE MODEL YEAR: 2004 : BUILD DATE: 08/03

TEST FAILURE DESCRIPTION: _____

S225 REQUIREMENT, PARAGRAPH S12(a) :INDICATE WHICH SEATING
POSITIONS IN THE VEHICLE ARE EQUIPPED WITH TETHER ANCHORAGES
AND CHILD RESTRAINT ANCHORAGE SYSTEMS.

NOTIFICATION TO NHTSA (COTR): Amanda Prescott

DATE: 10/06/04 BY: Grant Farrand

REMARKS: